6.7.2.3.2.12 Service Request Message

When the mobile station sends a *Service Request Message*, it shall use the following variable-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00001100') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| ENCRYPTION | 2 |
| SERV_REQ_SEQ | 3 |
| REQ_PURPOSE | 4 |
| Zero or one occurrence of the following record: | |
| RECORD_TYPE | 8 |
| RECORD_LEN | 8 |
| Type-specific fields | 8 × RECORD_LEN |

MSG_TYPE - Message type.

The mobile station shall set this field to '00001100'.

ACK_SEQ - Acknowledgment sequence number.

See 6.7.2.3.1.1.

MSG_SEQ - Message sequence number.

See 6.7.2.3.1.1.

ACK_REQ - Acknowledgment required indicator.

See 6.7.2.3.1.1.

ENCRYPTION - Message encryption indicator.

See 6.7.2.3.1.2.

SERV_REQ_SEQ - Service request sequence number.

The mobile station shall set this field to the service request sequence number pertaining to this request message as specified in 6.6.4.1.2.1.1.

REQ_PURPOSE - Request purpose.

The mobile station shall set this field to the appropriate REQ_PURPOSE code from Table 6.7.2.3.2.12-1 to indicate the purpose of the message.

**Table 6.7.2.3.2.12-1. REQ_PURPOSE Codes**

| REQ_PURPOSE (binary) | Meaning |
|---|---|
| 0000 | Indicates that the purpose of the message is to accept a proposed service configuration. |
| 0001 | Indicates that the purpose of the message is to reject a proposed service configuration. |
| 0010 | Indicates that the purpose of the message is to propose a service configuration. |
| All other REQ_PURPOSE codes are reserved. | |

If the REQ_PURPOSE code is set to '0010', the mobile station shall include one occurrence of the following three-field record to specify the proposed service configuration; otherwise, the mobile station shall not include the following record:

RECORD_TYPE - Information record type.

The mobile station shall set this field to the record type value shown in Table 6.7.4-1 corresponding to the Service Configuration information record.

RECORD_LEN - Information record length.

The mobile station shall set this field to the number of octets included in the type-specific fields of the Service Configuration information record.

Type-specific fields - Type-specific fields.

The mobile station shall set these fields as specified in 6.7.4.18 for the Service Configuration information record.

#### 6.7.2.3.2.13 Service Response Message

When the mobile station sends a *Service Response Message*, it shall use the following variable-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00001101') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| ENCRYPTION | 2 |
| SERV_REQ_SEQ | 3 |
| RESP_PURPOSE | 4 |

Zero or one occurrence of the following record:

| | |
|---|---|
| RECORD_TYPE | 8 |
| RECORD_LEN | 8 |
| Type-specific fields | 8 × RECORD_LEN |

MSG_TYPE – Message type.

The mobile station shall set this field to '00001101'.

ACK_SEQ – Acknowledgment sequence number.

See 6.7.2.3.1.1.

MSG_SEQ – Message sequence number.

See 6.7.2.3.1.1.

ACK_REQ – Acknowledgment required indicator.

See 6.7.2.3.1.1.

ENCRYPTION – Message encryption indicator.

See 6.7.2.3.1.2.

SERV_REQ_SEQ – Service request sequence number.

The mobile station shall set this field to the value of the SERV_REQ_SEQ field of the *Service Request Message* to which it is responding.

RESP_PURPOSE – Response purpose.

The mobile station shall set this field to the appropriate RESP_PURPOSE code from Table 6.7.2.3.2.13-1 to indicate the purpose of the message.

**Table 6.7.2.3.2.13-1. RESP_PURPOSE Codes**

| RESP_PURPOSE (binary) | Meaning |
|---|---|
| 0000 | Indicates that the purpose of the message is to accept a proposed service configuration. |
| 0001 | Indicates that the purpose of the message is to reject a proposed service configuration. |
| 0010 | Indicates that the purpose of the message is to propose a service configuration. |
| All other RESP_PURPOSE codes are reserved. | |

If the RESP_PURPOSE field is set to '0010', the mobile station shall include one occurrence of the following record to specify the proposed service configuration; otherwise, the mobile station shall not include the following record:

RECORD_TYPE – Information record type.

The mobile station shall set this field to the record type value shown in Table 6.7.4-1 corresponding to the Service Configuration information record.

RECORD_LEN – Information record length.

The mobile station shall set this field to the number of octets included in the type-specific fields of the Service Configuration information record.

Type-specific fields – Type-specific fields.

The mobile station shall set these fields as specified in 6.7.4.18 for the Service Configuration information record.

6.7.2.3.2.14 Service Connect Completion Message

When the mobile station sends a *Service Connect Completion Message*, it shall use the following fixed-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00001110') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| ENCRYPTION | 2 |
| RESERVED | 1 |
| SERV_CON_SEQ | 3 |
| RESERVED | 3 |

MSG_TYPE – Message type.

The mobile station shall set this field to '00001110'.

ACK_SEQ – Acknowledgment sequence number.

See 6.7.2.3.1.1.

MSG_SEQ – Message sequence number.

See 6.7.2.3.1.1.

ACK_REQ – Acknowledgment required indicator.

See 6.7.2.3.1.1.

ENCRYPTION – Message encryption indicator.

See 6.7.2.3.1.2.

RESERVED Reserved bit.

The mobile station shall set this field to '0'.

SERV_CON_SEQ – Service connect sequence number.

The mobile station shall set this field to the value of the SERV_CON_SEQ field of the *Service Connect Message* to which it is responding.

RESERVED – Reserved bits.

The mobile station shall set this field to '000'.

6.7.2.3.2.15 Service Option Control Message

When the mobile station sends a *Service Option Control Message*, it shall use the following variable-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00001111') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| ENCRYPTION | 2 |
| CON_REF | 8 |
| SERVICE_OPTION | 16 |
| RESERVED | 7 |
| CTL_REC_LEN | 8 |
| Type-specific fields | 8 × CTL_REC_LEN |

MSG_TYPE – Message type.

The mobile station shall set this field to '00001111'.

ACK_SEQ – Acknowledgment sequence number.

See 6.7.2.3.1.1.

MSG_SEQ – Message sequence number.

See 6.7.2.3.1.1.

ACK_REQ – Acknowledgment required indicator.

See 6.7.2.3.1.1.

ENCRYPTION – Message encryption indicator.

See 6.7.2.3.1.2.

CON_REF – Service option connection reference.

The mobile station shall set this field to the reference for the target service option (see 6.6.4.1.2).

SERVICE_OPTION – Service option.

The mobile station shall set this field to the service option in use with the service option connection.

| | | |
|---|---|---|
| RESERVED | – | Reserved bits.<br>The mobile station shall set this field to '0000000'. |
| CTL_REC_LEN | – | Control record length.<br>The mobile station shall set this field to the number of octets included in the type-specific fields of this service option control record. |
| Type-specific fields | – | Type-specific fields.<br>The mobile station shall set these fields as specified by the requirements for the service option. |

### 6.7.2.3.2.16 Status Response Message

When the mobile station sends a *Status Response Message*, it shall use the following variable-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00010000') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| ENCRYPTION | 2 |
| QUAL_INFO_TYPE | 8 |
| QUAL_INFO_LEN | 3 |
| Type-specific fields. | 8 × QUAL_INFO_LEN |
| One or more occurrences of the following record: | |
| RECORD_TYPE | 8 |
| RECORD_LEN | 8 |
| Type-specific fields | 8 × RECORD_LEN |
| | |
| RESERVED | 4 |

MSG_TYPE – Message type.

The mobile station shall set this field to '00010000'.

ACK_SEQ – Acknowledgment sequence number.

See 6.7.2.3.1.1.

MSG_SEQ – Message sequence number.

See 6.7.2.3.1.1.

ACK_REQ – Acknowledgment required indicator.

See 6.7.2.3.1.1.

ENCRYPTION – Message encryption indicator.

See 6.7.2.3.1.2.

QUAL_INFO_TYPE – Qualification information type.

The mobile station shall set this field to the QUAL_INFO_TYPE field in the corresponding *Status Request Message*.

QUAL_INFO_LEN - Qualification information length.

The mobile station shall set this field to the QUAL_INFO_LEN field in the corresponding *Status Request Message*.

Type-specific fields - Type-specific fields.

The mobile station shall set these fields to the qualification information in the corresponding *Status Request Message*.

The mobile station shall include all the records requested in the corresponding *Status Request Message*. The mobile station shall include one occurrence of the following fields for each information record that is included:

RECORD_TYPE - Information record type.

The mobile station shall set this field to the record type value shown in Table 7.7.2.3.2.15-2 corresponding to the type of this information record.

RECORD_LEN - Information record length.

The mobile station shall set this field to the number of octets included in the type-specific fields of this information record.

Type-specific fields - Type-specific fields.

The mobile station shall set these fields as specified in 6.7.4 for this type of record, according to the mobile station's capabilities under the qualification information included in this message.

RESERVED - Reserved bits.

The mobile station shall set this field to '0000'.

6.7.2.3.2.17 TMSI Assignment Completion Message

When the mobile station sends a *TMSI Assignment Completion Message* on the Reverse Traffic Channel, it shall use the following fixed-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00010001') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| ENCRYPTION | 2 |
| RESERVED | 7 |

MSG_TYPE – Message type.
The mobile station shall set this field to '00010001'.

ACK_SEQ – Acknowledgment sequence number.
See 6.7.2.3.1.1.

MSG_SEQ – Message sequence number.
See 6.7.2.3.1.1.

ACK_REQ – Acknowledgment required indicator.
See 6.7.2.3.1.1.

ENCRYPTION – Message encryption indicator.
See 6.7.2.3.1.2.

RESERVED – Reserved bits.
The mobile station shall set this field to '0000000'.

### 6.7.2.3.2.18 Supplemental Channel Request Message

When the mobile station sends a *Supplemental Channel Request Message*, it shall use the following variable-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00010010') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| ENCRYPTION | 2 |
| SIZE_OF_REQ_BLOB | 4 |
| REQ_BLOB | 8 × SIZE_OF_REQ_BLOB |
| USE_SCRM_SEQ_NUM | 1 |
| SCRM_SEQ_NUM | 0 or 4 |
| REF_PN | 0 or 9 |
| PILOT_STRENGTH | 0 or 6 |
| NUM_ACT_PN | 0 or 3 |

If NUM_ACT_PN is included, the mobile station shall include NUM_ACT_PN occurrences of the following record:

| | |
|---|---|
| ACT_PN_PHASE | 15 |
| ACT_PILOT_STRENGTH | 6 |

| | |
|---|---|
| NUM_NGHBR_PN | 0 or 3 |

If NUM_NGHBR_PN is included, the mobile station shall include NUM_NGHBR_PN occurrences of the following record:

| | |
|---|---|
| NGHBR_PN_PHASE | 15 |
| NGHBR_PILOT_STRENGTH | 6 |

| | |
|---|---|
| RESERVED | 0 - 7 (as needed) |

MSG_TYPE – Message type.

The mobile station shall set this field to '00010010'.

ACK_SEQ – Acknowledgment sequence number.

See 6.7.2.3.1.1.

MSG_SEQ – Message sequence number.

See 6.7.2.3.1.1.

ACK_REQ – Acknowledgment required indicator.

See 6.7.2.3.1.1.

ENCRYPTION – Message encryption indicator.

See 6.7.2.3.1.2.

SIZE_OF_REQ_BLOB – Size of the request information block of bytes (REQ_BLOB).

The mobile station shall set this field to the number of bytes in the Reverse Supplemental Code Channel request block of bytes (REQ_BLOB).

REQ_BLOB – Reverse Supplemental Code Channel request block of bytes.

The mobile station shall include information in this field containing the parameters that specify the characteristics of the Reverse Supplemental Code Channels request. The mobile station shall set this field in accordance with the connected Service Option.

USE_SCRM_SEQ_NUM – Use *Supplemental Channel Request Message* sequence number indicator.

The mobile station shall set this field to '1' if the *Supplemental Channel Request Message* sequence number is included in this message; otherwise, the mobile station shall set this field to '0'.

SCRM_SEQ_NUM – *Supplemental Channel Request Message* sequence number.

If USE_SCRM_SEQ_NUM is set to '1', the mobile station shall set this field to the *Supplemental Channel Request Message* sequence number that the base station is to include in a *Supplemental Channel Assignment Message* which is in response to this message; otherwise, the mobile station shall omit this field.

REF_PN – Time reference PN sequence offset.

If SIZE_OF_REQ_BLOB is set to '0000', the mobile station shall omit this field; otherwise, the mobile station shall set this field to the PN sequence offset of the pilot used by the mobile station to derive its time reference, relative to the zero offset pilot PN sequence in units of 64 PN chips.

PILOT_STRENGTH – Reference pilot strength.

If SIZE_OF_REQ_BLOB is set to '0000', the mobile station shall omit this field; otherwise, the mobile station shall set this field to

$$\lfloor -2 \times 10 \times \log_{10} PS \rfloor,$$

where PS is the strength of the pilot used by the mobile station to derive its time reference (see 6.1.5.1), measured as specified in 6.6.6.2.2. If this value ($\lfloor -2 \times 10 \log_{10} PS \rfloor$) is less than 0, the mobile station shall set this field to '000000'. If this value is greater than '111111', the mobile station shall set this field to '111111'.

NUM_ACT_PN – Number of reported pilots in the Active Set.

If SIZE_OF_REQ_BLOB is set to '0000', the mobile station shall omit this field; otherwise, the mobile station shall set this field to the number of reported pilots in the Active Set other than the pilot identified by the REF_PN field.

If SIZE_OF_REQ_BLOB is set to '0000', the mobile station shall not include any occurrence of the following record; otherwise, the mobile station shall include one occurrence of the following two-field record for each pilot in the Active Set other than the pilot identified by the REF_PN field:

ACT_PN_PHASE – Active pilot measured phase.

The mobile station shall set this field to the phase of this pilot PN sequence relative to the zero offset pilot PN sequence, in units of one PN chip, as specified in 6.6.6.2.4.

ACT_PILOT_STRENGTH – Active pilot strength.

The mobile station shall set this field to

$$\lfloor - 2 \times 10 \times \log_{10} PS \rfloor,$$

where PS is the strength of this pilot, measured as specified in 6.6.6.2.2. If this value ($\lfloor -2 \times 10 \log_{10} PS \rfloor$) is less than 0, the mobile station shall set this field to '000000'. If this value is greater than 63, the mobile station shall set this field to '111111'.

NUM_NGHBR_PN – Number of reported neighbor pilots in the Candidate Set and the Neighbor Set.

If SIZE_OF_REQ_BLOB is set to '0000', the mobile station shall omit this field; otherwise, the mobile station shall set this field as follows:

The mobile station shall set this field to the number of reported pilots which are not in the Active Set and have measurable strength that exceeds ($T\_ADD_S$ - $T\_MULCHAN_S$). (NUM_ACT_PN + NUM_NGHBR_PN) shall not exceed 8. If there are more than (8 - NUM_ACT_PN) pilots not in the Active Set with strength exceeding ($T\_ADD_S$ - $T\_MULCHAN_S$), the mobile station shall set NUM_NGHBR_PN to (8 - NUM_ACT_PN) and report the NUM_NGHBR_PN strongest pilots not in the Active Set.

If SIZE_OF_REQ_BLOB is set to '0000', the mobile station shall not include any occurrence of the following record; otherwise, the mobile station shall include one occurrence of the following two-field record for each of the NUM_NGHBR_PN reported pilots.

NGHBR_PN_PHASE – Neighbor pilot measured phase.

The mobile station shall set this field to the phase of this pilot PN sequence relative to the zero offset pilot PN sequence, in units of one PN chip, as specified in 6.6.6.2.4.

NGHBR_PILOT-_STRENGTH – Neighbor pilot strength.

The mobile station shall set this field to

$$\lfloor -2 \times 10 \times \log_{10} PS \rfloor,$$

where PS is the strength of this pilot, measured as specified in 6.6.6.2.2. If this value ($\lfloor -2 \times 10 \log_{10} PS \rfloor$) is less than 0, the mobile station shall set this field to '000000'. If this value is greater than 63, the mobile station shall set this field to '111111'.

RESERVED – Reserved bits.

The mobile station shall add reserved bits as needed in order to make the length of the entire message equal to an integer number of octets. The mobile station shall set these bits to '0'.

6.7.2.3.2.19 Candidate Frequency Search Response Message

When the mobile station sends a *Candidate Frequency Search Response Message*, it shall use the following fixed-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00010011') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| ENCRYPTION | 2 |
| LAST_CFSRM_SEQ | 2 |
| TOTAL_OFF_TIME_FWD | 6 |
| MAX_OFF_TIME_FWD | 6 |
| TOTAL_OFF_TIME_REV | 6 |
| MAX_OFF_TIME_REV | 6 |
| RESERVED | 5 |

MSG_TYPE – Message type.

The mobile station shall set this field to '00010011'.

ACK_SEQ – Acknowledgment sequence number.

See 6.7.2.3.1.1.

MSG_SEQ – Message sequence number.

See 6.7.2.3.1.1.

ACK_REQ – Acknowledgment required indicator.

See 6.7.2.3.1.1.

ENCRYPTION – Message encryption indicator.

See 6.7.2.3.1.2.

LAST_CFSRM_SEQ – *Candidate Frequency Search Request Message* sequence number.

The mobile station shall set this field to the value of the CFSRM_SEQ field from the *Candidate Frequency Search Request Message* to which this message is a response.

TOTAL_OFF_TIME_FWD – Total time that the mobile station is off the Forward Traffic Channel.

The mobile station shall set this field to

$$\min(63, \lceil search\_time / 0.02 \rceil)$$

where *search_time* is the mobile station's estimate of the total length of time, in seconds, for which the mobile station will need to suspend its current Forward Traffic Channel processing in order to tune to the Candidate Frequency, to perform the requested search, and to re-tune to the Serving Frequency. If the mobile station requires multiple visits to the Candidate Frequency to complete the requested search, *search_time* is the total time for all visits to the Candidate Frequency in a search period.

MAX_OFF_TIME_FWD – Maximum time the mobile station is away from the Forward Traffic Channel.

The mobile station shall set this field to

$$\min(63, \lceil max\_off\_time / 0.02 \rceil)$$

where *max_off_time* is the mobile station's estimate of the maximum time, in seconds, for which the mobile station will need to suspend its current Forward Traffic Channel processing during a visit to the Candidate Frequency, to perform a part of the requested search, and to re-tune to the Serving Frequency.

TOTAL_OFF_TIME_REV – Total time that the mobile station is away from the Reverse Traffic Channel.

The mobile station shall set this field to

$$\min(63, \lceil search\_time / 0.02 \rceil)$$

where *search_time* is the mobile station's estimate of the total length of time, in seconds, for which the mobile station will need to suspend its current Reverse Traffic Channel processing in order to tune to the Candidate Frequency, to perform the requested search, and to re-tune to the Serving Frequency. If the mobile station requires multiple visits to the Candidate Frequency to complete the requested search, *search_time* is the total time for all visits to the Candidate Frequency in a search period.

MAX_OFF_TIME_REV – Maximum time the mobile station is away from the Reverse Traffic Channel.

The mobile station shall set this field to

$$\min(63, \lceil max\_off\_time / 0.02 \rceil)$$

where *max_off_time* is the mobile station's estimate of the maximum time, in seconds, for which the mobile station will need to suspend its current Reverse Traffic Channel processing during a visit to the Candidate Frequency, to perform a part of the requested search, and to re-tune to the Serving Frequency.

RESERVED – Reserved.

The base station shall set these bits to '00000'.

### 6.7.2.3.2.20 Candidate Frequency Search Report Message

When the mobile station sends a *Candidate Frequency Search Report Message*, it shall use the following variable-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00010100') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| ENCRYPTION | 2 |
| LAST_SRCH_MSG | 1 |
| LAST_SRCH_MSG_SEQ | 2 |
| SEARCH_MODE | 4 |
| MODE_SPECIFIC_LEN | 8 |
| Mode-specific fields | 8 × MODE_SPECIFIC_LEN |

MSG_TYPE – Message type.

The mobile station shall set this field to '00010100'.

ACK_SEQ – Acknowledgement sequence number.

See 6.7.2.3.1.1.

MSG_SEQ – Message sequence number.

See 6.7.2.3.1.1.

ACK_REQ – Acknowledgement required indicator.

See 6.7.2.3.1.1.

ENCRYPTION – Message encryption indicator.

See 6.7.2.3.1.2.

LAST_SRCH_MSG – Indicator for the type of message that started the search being reported.

If this message is being sent to report the results of a single search or a periodic search started by a *Candidate Frequency Search Control Message* or by a *Candidate Frequency Search Request Message*, the mobile station shall set this field to '0'; otherwise, the mobile station shall set this field to '1'.

LAST_SRCH_MSG_SEQ – Sequence number received in the message that started the search being reported.

If this message is being sent in response to a *Candidate Frequency Search Control Message*, the mobile station shall set this field to the value of the CFSCM_SEQ field from the *Candidate Frequency Search Control Message*.

If this message is being sent in response to a *Candidate Frequency Search Request Message*, the mobile station shall set this field to the value of the CFSRM_SEQ field from the *Candidate Frequency Search Request Message*.

If this message is being sent in response to a *General Handoff Direction Message*, the mobile station shall set this field to the value of the HDM_SEQ field from the *General Handoff Direction Message*.

SEARCH_MODE – Search mode.

The mobile station shall set this field to the SEARCH_MODE value shown in Table 7.7.3.3.2.27-2 corresponding to the type of search specified by the *Candidate Frequency Search Request Message* that specified the search parameters.

MODE_SPECIFIC_LEN – Length of mode-specific fields included in this message.

Mode-specific fields – Search mode-specific fields.

The mobile station shall include mode-specific fields based on the SEARCH_MODE of this message.

If SEARCH_MODE is equal to '0000', the mobile station shall include the following fields:

| Field | Length (bits) |
|---|---|
| BAND_CLASS | 5 |
| CDMA_FREQ | 11 |
| SF_TOTAL_RX_PWR | 5 |
| CF_TOTAL_RX_PWR | 5 |
| NUM_PILOTS | 6 |
| NUM_PILOTS occurrences of the following record: | |
| PILOT_PN_PHASE | 15 |
| PILOT_STRENGTH | 6 |
| RESERVED_1 | 3 |

BAND_CLASS - Band class.

If this message is being sent to report an unsuccessful hard handoff attempt, the mobile station shall set this field to the CDMA band class corresponding to the CDMA frequency assignment for the Target Frequency, as specified in TSB58-A. If this message is being sent to report measurements on a Candidate Frequency, the mobile station shall set this field to the CDMA band class corresponding to the CDMA frequency assignment for the Candidate Frequency, as specified in TSB58-A.

CDMA_FREQ – Frequency assignment.

If this message is being sent to report an unsuccessful hard handoff attempt, the mobile station shall set this field to the CDMA Channel number, in the specified CDMA band class, corresponding to the CDMA frequency assignment for the Target Frequency, as specified in 7.1.1.1. If this message is being sent to report measurements on a Candidate Frequency, the mobile station shall set this field to the CDMA Channel number, in the specified CDMA band class, corresponding to the CDMA frequency assignment for the Candidate Frequency, as specified in 7.1.1.1.

SF_TOTAL_RX_PWR – Total received power on the Serving Frequency.

The mobile station shall set this field to

$$\min(31, \lceil (total\_received\_power + 110) / 2 \rceil)$$

where *total_received_power* is the mean input power received by the mobile station on the Serving Frequency, in dBm/1.23 MHz.

CF_TOTAL_RX_PWR – Indicates the total received power on the Target Frequency or the Candidate Frequency.

If this message is being sent to report an unsuccessful hard handoff attempt, the mobile station shall include the total received power on the Target Frequency; if this message is being sent to report measurements on a Candidate Frequency, the mobile station shall include the total received power on the Candidate Frequency.

The mobile station shall set this field to

$$\min(31, \lceil (total\_received\_power + 110) / 2 \rceil)$$

where *total_received_power* is the mean input power received by the mobile station on the the Target Frequency or the Candidate Frequency, in dBm/1.23 MHz.

NUM_PILOTS – Number of pilots.

The mobile station shall set this field to the number of pilots included in this message. The mobile station shall set this field to a value from 0 to $N_{8m}$, inclusive.

The mobile station shall include NUM_PILOTS occurrences of the following three-field record:

PILOT_PN_PHASE - Pilot measured phase.

The mobile station shall set this field to the phase of the pilot PN sequence relative to the zero offset pilot PN sequence of this pilot, in units of one PN chip, as specified in 6.6.6.2.4.

PILOT_STRENGTH - Pilot strength.

The mobile station shall set this field to

$$\lfloor -2 \times 10 \times \log_{10} PS \rfloor,$$

where PS is the strength of this pilot, measured as specified in 6.6.6.2.2. If this value ($\lfloor -2 \times 10 \log_{10} PS \rfloor$) is less than 0, the mobile station shall set this field to '000000'. If this value is greater than 63, the mobile station shall set this field to '111111'.

RESERVED_1 - Reserved bits.

The mobile station shall set this field to '000'.

If SEARCH_MODE is equal to '0001', the mobile station shall include the following fields:

| Field | Length (bits) |
|---|---|
| BAND_CLASS | 5 |
| SF_TOTAL_RX_PWR | 5 |
| NUM_ANALOG_FREQS | 3 |
| RESERVED_2 | 5 |

NUM_ANALOG_FREQS occurrences of the following record:

| | |
|---|---|
| ANALOG_FREQ | 11 |
| SIGNAL_STRENGTH | 6 |

| | |
|---|---|
| RESERVED_3 | 0 - 7 (as needed) |

BAND_CLASS - Band class.

The mobile station shall set this field to the CDMA band class corresponding to the analog frequencies that are being reported in this message, as specified in TSB58-A.

SF_TOTAL_RX_PWR - Indicates the total received power on the Serving Frequency.

The mobile station shall set this field to

$$\min(31, \lceil (total\_received\_power + 110) / 2 \rceil)$$

where *total_received_power* is the mean input power received by the mobile station on the Serving Frequency, in dBm/1.23 MHz.

NUM_ANALOG_FREQS - Number of analog frequencies.

The base station shall set this field to the number of analog frequencies included in this message.

RESERVED_2 - Reserved bits.

The mobile station shall set this field to '00000'.

The message will include NUM_ANALOG_FREQS occurrences of the following three-field record, one for each neighbor on the candidate frequency.

ANALOG_FREQ - Analog frequency channel number.

The base station shall set this field analog frequency channel number to search.

SIGNAL_STRENGTH - Signal strength.

The mobile station shall set this field to

$$\lfloor -0.5 \times SS \rfloor,$$

where SS is the strength of this signal, measured in dBm as specified in 6.6.6.2.10.3. If this value ($\lfloor -0.5 \times SS \rfloor$) is less than 0, the mobile station shall set this field to '000000'. If this value is greater than 63, the mobile station shall set this field to '111111'.

RESERVED_3 - The mobile station shall add reserved bits as needed in order to make the length of the entire message equal to an integer number of octets. The mobile station shall set each of these bits to '0'.

6.7.2.3.2.21 Periodic Pilot Strength Measurement Message

When the mobile station sends the *Periodic Pilot Strength Measurement Message*, it shall use the following variable-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00010101') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| ENCRYPTION | 2 |
| REF_PN | 9 |
| PILOT_STRENGTH | 6 |
| KEEP | 1 |
| SF_RX_PWR | 5 |
| NUM_PILOT | 4 |
| NUM_PILOT occurrences of the following record: | |
| PILOT_PN_PHASE | 15 |
| PILOT_STRENGTH | 6 |
| KEEP | 1 |
| | |
| RESERVED | 0 - 7 (as needed) |

MSG_TYPE - Message type.
The mobile station shall set this field to '00010101'.

ACK_SEQ - Acknowledgement sequence number.
See 6.7.2.3.1.1.

MSG_SEQ - Message sequence number.
See 6.7.2.3.1.1.

ACK_REQ - Acknowledgement required indicator.
See 6.7.2.3.1.1.

ENCRYPTION - Message encryption indicator.
See 6.7.2.3.1.2.

REF_PN - Time reference PN sequence offset.

The mobile station shall set this field to the PN sequence offset of the pilot used by the mobile station to derive its time reference, relative to the zero offset pilot PN sequence in units of 64 PN chips.

PILOT_STRENGTH - Pilot strength.

The mobile station shall set this field to

$$\lfloor -2 \times 10 \times \log_{10} PS \rfloor,$$

where PS is the strength of the pilot used by the mobile station to derive its time reference (see 6.1.5.1), measured as specified in 6.6.6.2.2. If this value is less than 0, the mobile station shall set this field to '000000'. If this value is greater than '111111', the mobile station shall set this field to '111111'.

KEEP - Keep pilot indicator.

If the handoff drop timer (see 6.6.6.2.3) corresponding to the pilot used by the mobile station to derive its time reference (see 6.1.5.1) has expired, the mobile station shall set this field to '0'; otherwise, the mobile station shall set this field to '1'.

SF_RX_PWR - The received power spectral density of the Serving Frequency.

The base station shall set this field to

$$\lceil (10 \times \log_{10}(spec\_density) + 120) / 2 \rceil$$

where *spec_density* is the mobile station received power spectral density of the Serving Frequency, in mW/1.23MHz, averaged over the last $N_{12m}$ frames (see 6.6.6.2.5.1).

If this value is less than 0, the mobile station shall set this field to '00000'.

NUM_PILOT - Number of Pilots.

The mobile shall set this field to the number of other reported pilots of the Active Set and the candidate Set.

The mobile station shall include NUM_PILOT occurrences of the following three-field record, one for each pilot in the Active Set and one for each pilot in the Candidate Set, other than the pilot identified by the REF_PN field.

PILOT_PN_PHASE - Pilot measured phase.

The mobile station shall set this field to the phase of the pilot PN sequence relative to the zero offset pilot PN sequence of this pilot, in units of one PN chip, as specified in 6.6.6.2.4.

PILOT_STRENGTH - Pilot strength.

The mobile station shall set this field to

$$\lfloor -2 \times 10 \times \log_{10} PS \rfloor,$$

where PS is the strength of this pilot, measured as specified in 6.6.6.2.2. If this value is less than 0, the mobile station shall set this field to '000000'. If this value is greater than '111111', the mobile station shall set this field to '111111'.

KEEP - Keep pilot indicator.

If the handoff drop timer (see 6.6.6.2.3) corresponding to this pilot has expired, the mobile station shall set this field to '0'; otherwise, the mobile station shall set this field to '1'.

RESERVED - Reserved bits.

The mobile station shall add reserved bits as needed in order to make the length of the entire message equal to an integer number of octets. The mobile station shall set these bits to '0'.

### 6.7.3 Orders

*Order Messages* are sent by the mobile station on the Access Channel and on the Reverse Traffic Channel. The general format used on the Access Channel is defined in 6.7.1.3.2.2, and the general format used on the Reverse Traffic Channel is defined in 6.7.2.3.2.1. There are many specific types of *Order Messages*, as shown in Table 6.7.3-1.

The mobile station may send on the Access Channel any type of order shown in Table 6.7.3-1 with a 'Y' in the first column, but shall not send on the Access Channel any type of order with an 'N' in the first column. The mobile station may send on the Reverse Traffic Channel any type of order shown in Table 6.7.3-1 with a 'Y' in the second column, but shall not send on the Reverse Traffic Channel any type of order with an 'N' in the second column. The mobile station shall be capable of sending all types of orders shown in Table 6.7.3-1 with a 'Y' in the sixth column.

An order consists of a 6-bit order code and zero or more order-specific fields. The mobile station shall set the ORDER field in the *Order Message* to the order code shown in Table 6.7.3-1 corresponding to the type of order being sent.

If the order qualification code in the fourth column of Table 6.7.3-1 is '00000000' and there are no other additional fields as shown by an 'N' in the fifth column, the mobile station shall include no order qualification code or other order-specific fields in the *Order Message*. The order qualification code of such a message is implicitly '00000000'.

If the order qualification code is not '00000000' and there are no other additional fields as shown in Table 6.7.3-1 by an 'N' in the fifth column, the mobile station shall include the order qualification code as the only order-specific field in the *Order Message*.

If there are other additional fields as shown in Table 6.7.3-1 by a 'Y' in the fifth column, the mobile station shall include order-specific fields as specified in the corresponding subsection of this section.

**Table 6.7.3-1. Order and Order Qualification Codes Used on the Reverse Traffic Channel and the Access Channel (Part 1 of 4)**

| Access Channel Order | Reverse Traffic Channel Order | Order Code, ORDER (binary) | Order Qualification Code, ORDQ (binary) | More Fields other than ORDQ | Support Req'd | Name/Function |
|---|---|---|---|---|---|---|
| Y | Y | 000010 | 00000000 | Y | Y | *Base Station Challenge Order* (see 6.7.3.1) |
| Y | Y | 000011 | 00000000 | N | Y | *SSD Update Confirmation Order* |
| Y | Y | 000011 | 00000001 | N | Y | *SSD Update Rejection Order* |
| N | Y | 000101 | 0000nnnn | N | Y | *Parameter Update Confirmation Order* (where 'nnnn' is the Request Number) |
| N | Y | 001011 | 00000000 | N | N | *Request Wide Analog Service Order* |
| N | Y | 001011 | 00000001 | N | N | *Request Narrow Analog Service Order* |
| N | Y | 001011 | 00000010 | N | N | *Request Analog Service Order* |
| Y | Y | 010000 | 00000000 | N | Y | *Mobile Station Acknowledgment Order* |
| N | Y | 010011 | 00000000 | Y | N | *Service Option Request Order* (Band Class 0 only) (see 6.7.3.2) |
| N | Y | 010100 | 00000000 | Y | Y | *Service Option Response Order* (Band Class 0 only) (see 6.7.3.3) |
| Y | Y | 010101 | 00000000 | N | Y | *Release Order* (normal release) |
| Y | Y | 010101 | 00000001 | N | Y | *Release Order* (with power-down indication) |
| N | Y | 010111 | 00000000 | N | N | *Long Code Transition Request Order* (request public) |
| N | Y | 010111 | 00000001 | N | N | *Long Code Transition Request Order* (request private) |

1 **Table 6.7.3-1. Order and Order Qualification Codes Used on the Reverse Traffic**
2 **Channel and the Access Channel (Part 2 of 4)**

| Access Channel Order | Reverse Traffic Channel Order | Order Code, ORDER (binary) | Order Qualification Code, ORDQ (binary) | More Fields other than ORDQ | Support Req'd | Name/Function |
|---|---|---|---|---|---|---|
| N | Y | 010111 | 00000010 | N | Y | *Long Code Transition Response Order* (use public) |
| N | Y | 010111 | 00000011 | N | N | *Long Code Transition Response Order* (use private) |
| N | Y | 011000 | 00000000 | N | Y | *Connect Order* |
| N | Y | 011001 | 0000nnnn | N | Y | *Continuous DTMF Tone Order* (where 'nnnn' is the tone per Table 6.7.1.3.2.4-4). |
| N | Y | 011001 | 11111111 | N | Y | *Continuous DTMF Tone Order* (Stop continuous DTMF tone) |
| N | Y | 011101 | nnnnnnnn | N | Y | *Service Option Control Order* (Band Class 0 only) (the specific control is designated by 'nnnnnnnn' as determined by each service option) |
| Y | Y | 011110 | nnnnnnnn | N | N | *Local Control Response Order* (specific response as designated by 'nnnnnnnn' as determined by each system) |
| Y | Y | 011111 | 00000001 | Y | Y | *Mobile Station Reject Order* (unspecified reason; see 6.7.3.4) |
| Y | Y | 011111 | 00000010 | Y | Y | *Mobile Station Reject Order* (message not accepted in this state; see 6.7.3.4) |
| Y | Y | 011111 | 00000011 | Y | Y | *Mobile Station Reject Order* (message structure not acceptable; see 6.7.3.4) |

**Table 6.7.3-1. Order and Order Qualification Codes Used on the Reverse Traffic Channel and the Access Channel (Part 3 of 4)**

| Access Channel Order | Reverse Traffic Channel Order | Order Code, ORDER (binary) | Order Qualification Code, ORDQ (binary) | More Fields other than ORDQ | Support Req'd | Name/Function |
|---|---|---|---|---|---|---|
| Y | Y | 011111 | 00000100 | Y | Y | *Mobile Station Reject Order* (message field not in valid range; see 6.7.3.4) |
| N | Y | 011111 | 00000101 | Y | Y | *Mobile Station Reject Order* (message type or order code not understood; see 6.7.3.4) |
| Y | Y | 011111 | 00000110 | Y | Y | *Mobile Station Reject Order* (message requires a capability that is not supported by the mobile station; see 6.7.3.4) |
| Y | Y | 011111 | 00000111 | Y | Y | *Mobile Station Reject Order* (message cannot be handled by the current mobile station configuration; see 6.7.3.4) |
| Y | Y | 011111 | 00001000 | Y | Y | *Mobile Station Reject Order* (response message would exceed allowable length; see 6.7.3.4) |
| Y | Y | 011111 | 00001001 | Y | Y | *Mobile Station Reject Order* (information record is not supported for the specified band class and operating mode; see 6.7.3.4) |
| N | Y | 011111 | 00001010 | Y | Y | *Mobile Station Reject Order* (search set not specified; see 6.6.6.2.5.1) |
| N | Y | 011111 | 00001011 | Y | Y | *Mobile Station Reject Order* (invalid search request; see 6.6.6.2.5.1) |

**Table 6.7.3-1. Order and Order Qualification Codes Used on the Reverse Traffic Channel and the Access Channel (Part 4 of 4)**

| Access Channel Order | Reverse Traffic Channel Order | Order Code, ORDER (binary) | Order Qualification Code, ORDQ (binary) | More Fields other than ORDQ | Support Req'd | Name/Function |
|---|---|---|---|---|---|---|
| N | Y | 011111 | 00001100 | Y | Y | *Mobile Station Reject Order* (invalid frequency assignment; see 6.6.6.2.5.1) |
| N | Y | 011111 | 00001101 | Y | Y | *Mobile Station Reject Order* (search period too short; see 6.6.6.2.5.1) |
| All other codes are reserved. | | | | | | |

### 6.7.3.1 Base Station Challenge Order

When the mobile station sends a *Base Station Challenge Order*, it shall use the following fixed-length format for the order-specific fields:

| **Order-Specific Field** | **Length (bits)** |
|---|---|
| ORDQ | 8 |
| RANDBS | 32 |

ORDQ – Order qualification code.

The mobile station shall set this field to '00000000'.

RANDBS – Random challenge data.

The mobile station shall set this field as specified in 6.3.12.1.9.

### 6.7.3.2 Service Option Request Order

When the mobile station sends a *Service Option Request Order*, it shall use the following fixed-length format for the order-specific fields:

| **Order-Specific Field** | **Length (bits)** |
|---|---|
| ORDQ | 8 |
| SERVICE_OPTION | 16 |

ORDQ - Order qualification code.

The mobile station shall set this field to '00000000'.

SERVICE_OPTION - Service option.

The mobile station shall set this field to the service option code specified in TSB58-A, corresponding to the requested or alternative service option.

6.7.3.3 Service Option Response Order

When the mobile station sends a *Service Option Response Order*, it shall use the following fixed-length format for the order-specific fields:

| Order-Specific Field | Length (bits) |
|---|---|
| ORDQ | 8 |
| SERVICE_OPTION | 16 |

ORDQ – Order qualification code.

The mobile station shall set this field to '00000000'.

SERVICE_OPTION – Service option.

The mobile station shall set this field to the service option code specified in TSB58-A, corresponding to the accepted service option, or to '0000000000000000' to reject the proposed service option. See 6.6.4.1.2.2.1.

6.7.3.4 Mobile Station Reject Order

The *Mobile Station Reject Order* can be sent on either the Access Channel or the Reverse Traffic Channel. The mobile station shall use the following variable-length format for the order-specific fields:

| Order-Specific Field | Length (bits) |
|---|---|
| ORDQ | 8 |
| REJECTED_TYPE | 8 |

If the order is sent on the Access Channel and
REJECTED_TYPE is '00000111'
or if the order is sent on the Reverse Traffic Channel and
REJECTED_TYPE is '00000001'
the order-specific fields also include the following two fields:

| | |
|---|---|
| REJECTED_ORDER | 8 |
| REJECTED_ORDQ | 8 |

If the order is sent on the Reverse Traffic Channel and
REJECTED_TYPE is '00001100'
the order-specific fields also include the following field:

| | |
|---|---|
| REJECTED_PARAM_ID | 16 |

If the order is sent on the Access Channel and
REJECTED_TYPE is '00001100'
or if the order is sent on the Reverse Traffic Channel and
REJECTED_TYPE is '00000011' or
REJECTED_TYPE is '00001110'
the order-specific fields also include the following field:

| | |
|---|---|
| REJECTED_RECORD | 8 |

ORDQ – Order qualification code.

The mobile station shall set this field to the ORDQ value shown in Table 6.7.3-1 corresponding to the reason for rejecting the message.

REJECTED_TYPE – Message type of rejected message.

The mobile station shall set this field to the value of the MSG_TYPE field of the message being rejected.

REJECTED_ORDER – Order type of rejected message.

If the rejected message was an *Order Message*, the mobile station shall set this field to the value of the ORDER field in the rejected message; otherwise the mobile station shall omit this field.

REJECTED_ORDQ – Order qualification code of rejected message.

If the rejected message was an *Order Message* including an ORDQ field, the mobile station shall set this field to the value of the ORDQ field in the rejected message. If the rejected message was an *Order Message* not including an ORDQ field, the mobile station shall set this field to '00000000'; otherwise the mobile station shall omit this field.

REJECTED_PARAM_ID – Parameter identification of the rejected parameter.

If the rejected message was a *Set Parameters Message*, the mobile station shall set this field to the PARAMETER_ID of the first parameter for which the requested operation could not be completed; otherwise the mobile station shall omit this field.

REJECTED_RECORD – Record type of the rejected information record.

If the rejected message was a *Feature Notification Message*, an *Alert With Information Message* or a *Flash With Information Message*, the mobile station shall set this field to the RECORD_TYPE field of the first information record that could not be accepted; otherwise the mobile station shall omit this field.

### 6.7.4 Information Records

On the Access Channel, information records may be included in the *Status Response Message* and the *Extended Status Response Message*. On the Reverse Traffic Channel, information records may be included in the *Origination Continuation Message*, the *Flash With Information Message*, the *Service Request Message*, the *Service Response Message*, the *Status Message*, and the *Status Response Message*. Table 6.7.4-1 lists the information record type values that may be used with each message type. The following sections describe the contents of each of the record types in detail.

**Table 6.7.4-1. Information Record Types (Part 1 of 2)**

| Information Record | Record Type (binary) | Message Type | Access Channel | Reverse Traffic Channel |
|---|---|---|---|---|
| Reserved | 00000001 | None | - | - |
| Feature Indicator | 00000010 | Flash | N | Y |
| Keypad Facility | 00000011 | Flash | N | Y |
| Called Party Number | 00000100 | Flash | N | Y |
| Calling Party Number | 00000101 | Flash | N | Y |
| | | Origination Continuation | N | Y |
| Reserved for Obsolete Identification | 00000110 | - | - | - |
| Call Mode | 00000111 | Status [1] | N | Y |
| Terminal Information | 00001000 | Status [1] | Y | Y |
| Roaming Information | 00001001 | Status [1] | Y | Y |
| Security Status | 00001010 | Status [1] | N | Y |
| Connected Number | 00001011 | Flash | N | Y |
| IMSI | 00001100 | Status [1] | Y | Y |
| ESN | 00001101 | Status [1] | Y | Y |
| Band Class Information | 00001110 | Status [2] | Y | Y |
| Power Class Information | 00001111 | Status [2] | Y | Y |
| Operating Mode Information | 00010000 | Status [2] | Y | Y |
| Service Option Information | 00010001 | Status [2] | Y | Y |
| Multiplex Option Information | 00010010 | Status [2] | Y | Y |
| Service Configuration Information | 00010011 | Status [2] | N | Y |
| | | Service Request | N | Y |
| | | Service Response | N | Y |

**Table 6.7.4-1. Information Record Types (Part 2 of 2)**

| Information Record | Record Type (binary) | Message Type | Access Channel | Reverse Traffic Channel |
|---|---|---|---|---|
| Called Party Subaddress | 00010100 | Flash | N | Y |
| | | Origination Continuation | N | Y |
| Calling Party Subaddress | 00010101 | Flash | N | Y |
| | | Origination Continuation | N | Y |
| Connected Subaddress | 00010110 | Flash | N | Y |
| Power Control Information | 00010111 | Status [2] | Y | Y |
| IMSI_M | 00011000 | Status [2] | Y | Y |
| IMSI_T | 00011001 | Status [2] | Y | Y |
| Capability Information | 00011010 | Status [2] | Y | Y |
| Extended Record Type — International | 11111110 | Country-Specific | | |

All other record type values are reserved.

[1] This information record may be included in a *Status Message*, a *Status Response Message*, or an *Extended Status Response Message*.

[2] This information record may be included in a *Status Response Message* or an *Extended Status Response Message*.

### 6.7.4.1 Feature Indicator

This information record can be included in a *Flash With Information Message* and allows the user to invoke supplementary services and features. The mobile station shall use the following fixed-length format for the type-specific fields:

| Type-Specific Field | Length (bits) |
|---|---|
| FEATURE | 4 |
| RESERVED | 4 |

FEATURE – Feature identifier.

This field identifies the supplementary service or feature to be invoked. Field values are specified in Table 6.7.4.1-1.

**Table 6.7.4.1-1. Feature Identifiers**

| Description | Feature Identifiers (binary) |
|---|---|
| Incoming Call Forwarding | 0000 |
| Reserved | 0001 - 1111 |

RESERVED – Reserved bits.

The mobile station shall set this field to ‘0000’.

6.7.4.2 Keypad Facility

This information record can be included in a *Flash With Information Message* and allows the user to send characters entered via a keyboard or other such terminal. The mobile station shall use the following variable-length format for the type-specific fields:

| Type-Specific Field | Length (bits) |
|---|---|
| One or more occurrences of the following field: | |
| CHARi | 8 |

CHARi - Character.

The mobile station shall include one occurrence of this field for each character entered. The mobile station shall set each occurrence of this field to the ASCII representation corresponding to the character entered, as specified in ANSI X3.4, with the most significant bit set to '0'.

### 6.7.4.3 Called Party Number

This information record identifies the called party's number. The mobile station shall use the following variable-length format for the type-specific fields:

| Type-Specific Field | Length (bits) |
|---|---|
| NUMBER_TYPE | 3 |
| NUMBER_PLAN | 4 |
| Zero or more occurrences of the following field: | |
| CHARi | 8 |
| RESERVED | 1 |

NUMBER_TYPE – Type of number.

The mobile station shall set this field to the NUMBER_TYPE value shown in Table 6.7.1.3.2.4-2 corresponding to the type of the called number, as defined in ANSI T1.607-1990, Section 4.5.9.

NUMBER_PLAN – Numbering plan.

The mobile station shall set this field to the NUMBER_PLAN value shown in Table 6.7.1.3.2.4-3 corresponding to the numbering plan used for the called number, as defined in ANSI T1.607 §4.5.9.

CHARi – Character.

The mobile stations shall include one occurrence of this field for each character in the called number. The mobile station shall set each occurrence of this field to the ASCII representation corresponding to the character, as specified in ANSI X3.4, with the most significant bit set to '0'.

RESERVED – Reserved bit.

The mobile station shall set this field to '0'.

6.7.4.4 Calling Party Number

This information record can be included in a *Flash With Information Message* and identifies the calling party's number. The mobile station shall use the following variable-length format for the type-specific fields:

| Type-Specific Field | Length (bits) |
|---|---|
| NUMBER_TYPE | 3 |
| NUMBER_PLAN | 4 |
| PI | 2 |
| SI | 2 |
| Zero or more occurrences of the following field: | |
| CHARi | 8 |
| RESERVED | 5 |

NUMBER_TYPE – Type of number.

The mobile station shall set this field to the NUMBER_TYPE value shown in Table 6.7.1.3.2.4-2 corresponding to the type of the calling number, as defined in ANSI T1.607-1990, Section 4.5.9.

NUMBER_PLAN – Numbering plan.

The mobile station shall set this field to the NUMBER_PLAN value shown in Table 6.7.1.3.2.4-3 corresponding to the numbering plan used for the calling number, as defined in ANSI T1.607-1990, Section 4.5.9.

PI – Presentation indicator.

This field indicates whether or not the calling number should be displayed.

The mobile station shall set this field to the PI value shown in Table 6.7.4.4-1 corresponding to the presentation indicator, as defined in ANSI T1.607-1990, Section 4.5.9.

**Table 6.7.4.4-1. Presentation Indicators**

| Description | PI (binary) |
|---|---|
| Presentation allowed | 00 |
| Presentation restricted | 01 |
| Number not available | 10 |
| Reserved | 11 |

SI – Screening indicator.

This field indicates how the calling number was screened.

The mobile station shall set this field to the SI value shown in Table 6.7.4.4-2 corresponding to the screening indicator value, as defined in ANSI T1.607-1990, Section 4.5.9.

**Table 6.7.4.4-2. Screening Indicators**

| Description | SI (binary) |
|---|---|
| User-provided, not screened | 00 |
| User-provided, verified and passed | 01 |
| User-provided, verified and failed | 10 |
| Network-provided | 11 |

CHARi – Character.

The mobile stations shall include one occurrence of this field for each character in the calling number. The mobile station shall set each occurrence of this field to the ASCII representation corresponding to the character, as specified in ANSI X3.4, with the most significant bit set to '0'.

RESERVED – Reserved bits.

The mobile station shall set this field to '00000'.

## 6.7.4.5 Reserved

### 6.7.4.6 Call Mode

This information record can be included in a *Status Message* or a *Status Response Message* to return the mobile station's preferred call mode and call-related information. The mobile station shall use the following fixed-length format for the type-specific fields:

| **Type-Specific Field** | **Length (bits)** |
|---|---|
| ORIG_MODE | 1 |
| PRI_SERVICE | 16 |
| SEC_SERVICE | 16 |
| RESERVED | 7 |

ORIG_MODE - Origination mode indicator.

If the current call is a mobile-originated call, the mobile station shall set this field to '0'. If the current call is a mobile-terminated call, the mobile station shall set this field to '1'.

PRI_SERVICE - Primary service option.

The mobile station shall set this field to the value specified in TSB58-A, corresponding to the current primary service option. If no primary service option is active, the mobile station shall set this field to '0000000000000000'.

SEC_SERVICE - Secondary service option.

The mobile station shall set this field to the value specified in TSB58-A, corresponding to the current secondary service option. If no secondary service option is active, the mobile station shall set this field to '0000000000000000'.

RESERVED - Reserved bits.

The mobile station shall set this field to '0000000'.

### 6.7.4.7 Terminal Information

This information record can be included in a *Status Message*, a *Status Response Message*, or an *Extended Status Response Message* to return configuration information about the mobile station. The mobile station shall use the following variable-length format for the type-specific fields:

| **Type-Specific Field** | **Length (bits)** |
|---|---|
| MOB_P_REV | 8 |
| MOB_MFG_CODE | 8 |
| MOB_MODEL | 8 |
| MOB_FIRM_REV | 16 |
| SCM | 8 |
| LOCAL_CTRL | 1 |
| SLOT_CYCLE_INDEX | 3 |
| One or more occurrences of the following field: | |
| SERVICE_OPTION | 16 |
| RESERVED | 4 |

MOB_P_REV – Protocol revision of the mobile station.

If the status request does not specify a band class, the mobile station shall set this field to '00000100' or '00000101'; otherwise, the mobile station shall set this field to the MOB_P_REV associated with the requested band class and operating mode.[7]

MOB_MFG_CODE – Manufacturer code.

This field identifies the manufacturer of the mobile station.

The mobile station shall set this field to the manufacturer code assigned to its manufacturer.

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[7] A protocol revision of '00000101' indicates that the mobile station complies with all of the requirements (per use of "shall") specified in this document. A protocol revision of '00000100' indicates that the mobile station complies with all of the requirements (per use of "shall") specified in this document, except those pertaining to one or more of the following: PACA, Power Up Function, mobile-assisted hard handoff, and analog TIA/EIA-553-A compatibility.

| | | |
|---|---|---|
| MOB_MODEL | – | Model number.<br><br>This number is assigned by the manufacturer for a particular model.<br><br>The mobile station shall set this field to the model number assigned by the manufacturer for this mobile station. |
| MOB_FIRM_REV | – | Firmware revision number.<br><br>This number is assigned by the manufacturer for a particular firmware version.<br><br>The mobile station shall set this field to the revision number assigned by the manufacturer for the firmware version running in this mobile station. |
| SCM | – | Station class mark.<br><br>The mobile station shall set this field to its station class mark. See 6.3.3. |
| LOCAL_CTRL | – | Local control indicator.<br><br>If local control is enabled, the mobile station shall set this field to '1'. If local control is disabled, the mobile station shall set this field to '0'. See 2.6.1.2.2. |
| SLOT_CYCLE_INDEX | – | Slot cycle index.<br><br>If the requested operating mode is CDMA and the mobile station is configured for slotted mode operation, the mobile station shall set this field to the preferred slot cycle index, $SLOT\_CYCLE\_INDEX_p$ (see 6.6.2.1.1); otherwise, the mobile station shall set this field to '000'. |
| SERVICE_OPTION | – | Supported service option.<br><br>If the requested operating mode is CDMA, the mobile station shall include one occurrence of this field for each service option supported by the mobile station (see TSB58-A); otherwise, the mobile station shall include one occurrence of this field with the value set to '0000000000000000'. |
| RESERVED | – | Reserved bits.<br><br>The mobile station shall set this field to '0000'. |

### 6.7.4.8 Roaming Information

This information record can be included in a *Status Message*, a *Status Response Message*, or an *Extended Status Response Message* to return roaming information about the mobile station. The mobile station shall use the following variable-length format for the type-specific fields:

| Type-Specific Field | Length (bits) |
|---|---|
| ACCOLC | 4 |
| MOB_TERM_HOME | 1 |
| MOB_TERM_FOR_SID | 1 |
| MOB_TERM_FOR_NID | 1 |
| Zero or more occurrences of the following record: | |
| SID | 15 |
| NID | 16 |
| RESERVED | 0-7 (as needed) |

ACCOLC – Overload class.

The mobile station shall set this field to the access overload class assigned to the mobile station.

MOB_TERM_HOME – Home (non-roaming) registration enable indicator.

If the mobile station is configured to receive mobile station terminated calls when not roaming, the mobile station shall set this field to '1'; otherwise, the mobile station shall set this field to '0'. See 6.6.5.3.

MOB_TERM_FOR_SID – Foreign SID roaming registration enable indicator.

If the mobile station is configured to receive mobile station terminated calls when it is a foreign SID roamer, the mobile station shall set this field to '1'; otherwise, the mobile station shall set this field to '0'. See 6.6.5.3.

MOB_TERM_FOR_NID – Foreign NID roaming registration enable indicator.

If the mobile station is configured to receive mobile station terminated calls when it is a foreign NID roamer, the mobile station shall set this field to '1'; otherwise, the mobile station shall set this field to '0'. See 6.6.5.3.

The mobile station shall include one occurrence of the following two-field record for each home (non-roaming) (SID, NID) pair (see 6.6.5.2):

SID – System identification.

The mobile station shall set this field to the SID value for this (SID, NID) pair.

NID – Network identification.

The mobile station shall set this field to the NID value for this (SID, NID) pair.

RESERVED – Reserved bit.

The mobile station shall add reserved bits as needed in order to make the length of the entire information record equal to an integer number of octets. The mobile station shall set these bits to '0'.

### 6.7.4.9 Security Status

This information record can be included in a *Status Message* or a *Status Response Message* to return the authentication, encryption, and voice privacy modes of the mobile station. The mobile station shall use the following fixed-length format for the type-specific fields:

| Type-Specific Field | Length (bits) |
|---|---|
| AUTH_MODE | 2 |
| ENCRYPT_MODE | 2 |
| PRIVATE_LCM | 1 |
| RESERVED | 3 |

AUTH_MODE – Authentication mode.

If the mobile station provided standard authentication information at the initiation of this call, the mobile station shall set this field to '01'; otherwise, the mobile station shall set this field to '00'. All other values are reserved.

ENCRYPT_MODE – Message encryption mode.

The mobile station shall set this field to the value shown in Table 7.7.2.3.2.8-2 corresponding to the message encryption mode currently in use for this call.

PRIVATE_LCM – Private long code mask indicator.

If the mobile station is using the private long code mask for this call, the mobile station shall set this field to '1'. If the mobile station is using the public long code mask for this call, the mobile station shall set this field to '0'.

RESERVED – Reserved bits.

The mobile station shall set this field to '000'.

### 6.7.4.10 Connected Number

This information record can be included in a *Flash With Information Message* to identify the responding party to a call. The mobile station shall use the following variable-length format for the type-specific fields:

| Type-Specific Field | Length (bits) |
|---|---|
| NUMBER_TYPE | 3 |
| NUMBER_PLAN | 4 |
| PI | 2 |
| SI | 2 |
| Zero or more occurrences of the following field: | |
| CHARi | 8 |
| RESERVED | 5 |

NUMBER_TYPE - Type of number.

The mobile station shall set this field to the NUMBER_TYPE value shown in Table 6.7.1.3.2.4-2 corresponding to the type of the connected number as defined ANSI T1.607-1990, Section 4.5.9.

NUMBER_PLAN - Numbering plan.

The mobile station shall set this field to the NUMBER_PLAN value shown in Table 6.7.1.3.2.4-3 corresponding to the numbering plan used for the connected number, as defined, in ANSI T1.607-1990, Section 4.5.9.

PI - Presentation indicator.

This field indicates whether or not the connected number should be displayed. The mobile station shall set this field to the PI value shown in Table 6.7.4.4-1 corresponding to the presentation indicator, as defined in ANSI T1.607-1990, Section 4.5.9.

SI - Screening indicator.

This field indicates how the connected number was screened. The mobile station shall set this field to the SI value shown in Table 6.7.4.4-2 corresponding to the screening indicator value, as defined in ANSI T1.607-1990, Section 4.5.9.

CHARi - Character.

The mobile station shall include one occurrence of this field for each character in the connected number. The mobile station shall set each occurrence of this field to the ASCII representation corresponding to the character, as specified in ANSI X3.4, with the most significant bit set to '0'.

RESERVED - Reserved bits.

The mobile station shall set this field to '00000'.

### 6.7.4.11 IMSI

This information record can be included in a *Status Message*, a *Status Response Message*, or an *Extended Status Response Message* to return the mobile station's operational IMSI. The mobile station shall use the following fixed-length format for the type-specific fields:

| Type-Specific Field | Length (bits) |
|---|---|
| IMSI_CLASS | 1 |
| IMSI_ADDR_NUM | 3 |
| MCC_O | 10 |
| IMSI_O_11_12 | 7 |
| IMSI_O_S | 34 |
| RESERVED | 1 |

IMSI_CLASS – If IMSI_O is a class 0 IMSI, the mobile station shall set this field to '0'; otherwise, the mobile station shall set this field to '1'.

IMSI_ADDR_NUM – Number of IMSI_O address digits.

If IMSI_O is a class 1 IMSI, the mobile station shall set this field to four less than the number of digits in the NMSI; otherwise, the mobile station shall set this field to '000'.

MCC_O – Mobile Ccountry Code of the operational IMSI.

The mobile station shall set this field to $MCC\_O_S$. (see 6.3.1).

IMSI_O_11_12 – The 11th and 12th digits of the operational IMSI.

The mobile station shall set this field to $IMSI\_O\_11\_12_S$. (see 6.3.1).

IMSI_O_S – Last ten digits of the operational IMSI.

The mobile station shall set this field to IMSI_O_S. (see 6.3.1.)

RESERVED – Reserved bit.

The mobile station shall set this field to '0'.

6.7.4.12 ESN

This information record can be included in a *Status Message*, a *Status Response Message*, or an *Extended Status Response Message* to return the mobile station ESN. The mobile station shall use the following fixed-length format for the type-specific field:

| Type-Specific Field | Length (bits) |
|---|---|
| ESN | 32 |

ESN - Mobile station electronic serial number.

The mobile station shall set this field to its electronic serial number (see 6.3.2).

6.7.4.13 Band Class Information

This information record can be included in a *Status Response Message*, or an *Extended Status Response Message* to return band class information about the mobile station. The mobile station shall use the following variable-length format for the type-specific field:

| Type-Specific Field | Length (bits) |
|---|---|
| BAND_CLASS_INFO | 8 × RECORD_LEN |

BAND_CLASS_INFO - Band class information.

This field indicates which band classes are supported by the mobile station.

This field currently consists of the following subfields which are included in the information record in the order shown:

| Subfield | Length (bits) | Subfield Description |
|---|---|---|
| BAND_CLASS_0 | 1 | 800 MHz cellular band |
| BAND_CLASS_1 | 1 | 1.8 to 2.0 GHz PCS band |
| BAND_CLASS_2 | 1 | 872 to 960 MHz TACS band (see TSB58-A) |
| BAND_CLASS_3 | 1 | 832 to 925 MHz JTACS band (see TSB58-A) |
| BAND_CLASS_4 | 1 | 1.75 to 1.87 GHz Korean PCS band (see TSB58-A) |
| RESERVED | 3 | |

The mobile station shall set each subfield to '1' if the corresponding band class is supported by the mobile station; otherwise, the mobile station shall set the subfield to '0'.

RESERVED - Reserved bits.

The mobile station shall set this field to '000000'.

When more band classes are defined, the reserved bits will be used for the new corresponding subfields. Sufficient octets will be added to this field to accommodate the new subfields. All the undefined bits in an additional octet will be reserved bits.

The mobile station shall set all the reserved bits to '0'. If all bits are set to '0' in an octet and all succeeding octets, the mobile station shall omit the octet and the succeeding octets.

### 6.7.4.14 Power Class Information

This information record can be included in a *Status Response Message*, or an *Extended Status Response Message* to return power class information about the mobile station. The mobile station shall use the following fixed-length format for the type-specific fields:

| **Type-Specific Field** | **Length (bits)** |
|---|---|
| MAX_EIRP | 8 |

MAX_EIRP – Maximum effective isotropic radiated power (EIRP).

The mobile station shall set this field to the minimum EIRP at maximum output (in dBW) for the mobile station plus 60 (seeTIA/EIA-98-B). When the mobile station output power is expressed in ERP, it may be converted to EIRP by adding 2 dB to the ERP value.[8]

[8] For example, if a mobile station has a minimum ERP at maximum output of -4 dBW, then the mobile station sets this field to 58.

### 6.7.4.15 Operating Mode Information

This information record can be included in a *Status Response Message* or an *Extended Status Response Message* to return operating mode information about the mobile station. The mobile station shall use the following variable-length format for the type-specific field:

| Type-Specific Field | Length (bits) |
|---|---|
| OP_MODE_INFO | 8 × RECORD_LEN |

OP_MODE_INFO – Operating mode information.

This field indicates which operating modes are supported by the mobile station.

This field currently consists of the following subfields which are included in the information record in the order shown in Table 6.7.4.15-1 for P_REV_IN_USE less than or equal to three and in Table 6.7.4.15-2 for P_REV_IN_USE greater than three.

**Table 6.7.4.15-1. OP_MODE for P_REV_IN_USE Less Than or Equal to Three**

| Subfield | Length (bits) | Subfield Description |
|---|---|---|
| OP_MODE0 | 1 | TIA/EIA-95-B CDMA mode in Band Class 1 |
| OP_MODE1 | 1 | TIA/EIA-95-B CDMA mode in Band Class 0 |
| OP_MODE2 | 1 | TIA/EIA-95-B analog mode |
| OP_MODE3 | 1 | TIA/EIA/IS-91 wide analog mode |
| OP_MODE4 | 1 | TIA/EIA/IS-91 narrow analog mode |
| RESERVED | 3 | – |

**Table 6.7.4.15-2. OP_MODE for P_REV_IN_USE Greater Than Three**

| Subfield | Length (bits) | Subfield Description | Standards for Band Class 0 and Band Class 1 |
|---|---|---|---|
| OP_MODE0 | 1 | CDMA mode | TIA/EIA-95-B |
| OP_MODE1 | 1 | CDMA mode | TIA/EIA-95-B |
| OP_MODE2 | 1 | Analog mode | TIA/EIA-95-B |
| OP_MODE3 | 1 | Wide analog mode | TIA/EIA/IS-91 |
| OP_MODE4 | 1 | Narrow analog mode | TIA/EIA/IS-91 |
| RESERVED | 3 | - | - |

The mobile station shall set each subfield to '1', if the corresponding operating mode is supported by the mobile station; otherwise, the mobile station shall set the subfield to '0'.

RESERVED - Reserved bits.

The mobile station shall set this field to '000'.

When more operating modes are defined, the reserved bits will be used for the new corresponding subfields. Sufficient octets will also be added to this field to accommodate the corresponding new subfields. All the undefined bits in an additional octet will be reserved bits.

The mobile station shall set all the reserved bits to '0'. If all bits are set to '0' in an octet and all succeeding octets, the mobile station shall omit the octet and the succeeding octets.

6.7.4.16 Service Option Information

This information record can be included in a *Status Response Message*, or an *Extended Status Response Message* to return service option information about the mobile station. The mobile station shall use the following variable-length format for the type-specific fields:

| Type-Specific Field | Length (bits) |
|---|---|
| One or more occurrences of the following field: | |
| RESERVED | 6 |
| FORWARD_SUPPORT | 1 |
| REVERSE_SUPPORT | 1 |
| SERVICE_OPTION | 16 |

The mobile station shall include one occurrence of the following record for each service option supported:

RESERVED – Reserved bits.

The mobile station shall set this field to '000000'.

FORWARD_SUPPORT – Support indicator for Forward Traffic Channel.

The mobile station shall set this field to '1' if the service option specified in the SERVICE_OPTION field is supported on the Forward Traffic Channel.

REVERSE_SUPPORT – Support indicator for Reverse Traffic Channel.

The mobile station shall set this field to '1' if the service option specified in the SERVICE_OPTION field is supported on the Reverse Traffic Channel.

SERVICE_OPTION – Service option.

The mobile station shall set this field to the value specified in TSB58-A for the service option supported.

### 6.7.4.17 Multiplex Option Information

This information record can be included in a *Status Response Message* or an *Extended Status Response Message* to return multiplex option information about the mobile station. The mobile station shall include at least one, and not more than six, instances of the record within the type-specific field according to the following rules:

- Within the type-specific field, the mobile station may include one instance of a record in which MULTIPLEX_OPTION is set to 1. If this instance is included, the mobile station shall support Multiplex Option 1 for forward and reverse operation.
- Within the type-specific field, the mobile station may include one instance of a record in which MULTIPLEX_OPTION is set to 2. If this instance is included, the mobile station shall support Multiplex Option 2 for forward and reverse operation.
- Within the type-specific field, the mobile station may include one instance of a record in which MULTIPLEX_OPTION is set to 3, 5, 7, 9, 11, 13, or 15 and with FOR_RATES set to '00000000'. If this instance is included, the mobile station shall set MULTIPLEX_OPTION to the highest numbered multiplex option from the set {3, 5, 7, 9, 11, 13, 15} which the mobile station supports for reverse operation, and the mobile station shall support all multiplex options less than or equal to MULTIPLEX_OPTION from that set for reverse operation.
- Within the type-specific field, the mobile station may include one instance of a record in which MULTIPLEX_OPTION is set to 4, 6, 8, 10, 12, 14, or 16 and with FOR_RATES set to '00000000'. If this instance is included, the mobile station shall set MULTIPLEX_OPTION to the highest numbered multiplex option from the set {4, 6, 8, 10, 12, 14, 16} which the mobile station supports for reverse operation, and the mobile station shall support all multiplex options less than or equal to MULTIPLEX_OPTION from that set for reverse operation.
- Within the type-specific field, the mobile station may include one instance of a record in which MULTIPLEX_OPTION is set to 3, 5, 7, 9, 11, 13, or 15 and with REV_RATES set to '00000000'. If this instance is included, the mobile station shall set MULTIPLEX_OPTION to the highest numbered multiplex option from the set {3, 5, 7, 9, 11, 13, 15} which the mobile station supports for forward operation, and the mobile station shall support all multiplex options less than or equal to MULTIPLEX_OPTION from that set for forward operation.
- Within the type-specific field, the mobile station may include one instance of a record in which MULTIPLEX_OPTION is set to 4, 6, 8, 10, 12, 14, or 16 and with REV_RATES set to '00000000'. If this instance is included, the mobile station shall set MULTIPLEX_OPTION to the highest numbered multiplex option from the set {4, 6, 8, 10, 12, 14, 16} which the mobile station supports for forward operation, and the mobile station shall support all multiplex options less than or equal to MULTIPLEX_OPTION from that set for forward operation.
- Within the type-specific field, the mobile station shall include at least one instance of a record in which FOR_RATES is set to a value other than '00000000'.

- Within the type-specific field, the mobile station shall include at least one instance of a record in which REV_RATES is set to a value other than '00000000'.

The mobile station shall use the following variable-length format for the type-specific fields:

| Type-Specific Field | Length (bits) |
|---|---|
| One or more occurrences of the following record: | |
| MULTIPLEX_OPTION | 16 |
| FOR_RATES | 8 |
| REV_RATES | 8 |

The mobile station shall include one occurrence of the following record for each specified multiplex option according to the previously stated rules:

MULTIPLEX_OPTION – Supported multiplex option.

The mobile station shall set this field to the number of the supported multiplex option (e.g., 1 corresponds to Multiplex Option 1).

FOR_RATES – Forward Traffic Channel transmission rates.

If FOR_RATES = '00000000', then the specified multiplex option in this record shall indicate the supported multiplex option for the Reverse Traffic Channel only. In this case, no further interpretation of the FOR_RATES field shall be made. The mobile station shall not set both FOR_RATES and REV_RATES equal to '00000000' in the same information record.

If MULTIPLEX_OPTION is equal to 1, 3, 5, 7, 9, 11, 13, or 15, this field consists of the subfields specified in Table 6.7.4.17-1 which are included in the information record in the order shown in the table. The subfields in Table 6.7.4.17-1 refer to the rates supported on the Fundamental Code Channel of the Forward Traffic Channel.

**Table 6.7.4.17-1. Forward Fundamental Traffic Channel Transmission Rates for Rate Set 1**

| Subfield | Length (bits) | Subfield Description |
|---|---|---|
| RS1_9600_FOR | 1 | Forward Traffic Channel Rate Set 1, 9600 bps |
| RS1_4800_FOR | 1 | Forward Traffic Channel Rate Set 1, 4800 bps |
| RS1_2400_FOR | 1 | Forward Traffic Channel Rate Set 1, 2400 bps |
| RS1_1200_FOR | 1 | Forward Traffic Channel Rate Set 1, 1200 bps |
| RESERVED | 4 | |

If MULTIPLEX_OPTION is equal to 2, 4, 6, 8, 10, 12, 14, or 16, this field consists of the subfields specified in Table 6.7.4.17-2 which are included in the information record in the order shown in the table. The subfields in Table 6.7.4.17-2 refer to the rates supported on the Fundamental Code Channel of the Forward Traffic Channel.

**Table 6.7.4.17-2. Forward Fundamental Traffic Channel Transmission Rates for Rate Set 2**

| Subfield | Length (bits) | Subfield Description |
|---|---|---|
| RS2_14400_FOR | 1 | Forward Traffic Channel Rate Set 2, 14400 bps |
| RS2_7200_FOR | 1 | Forward Traffic Channel Rate Set 2, 7200 bps |
| RS2_3600_FOR | 1 | Forward Traffic Channel Rate Set 2, 3600 bps |
| RS2_1800_FOR | 1 | Forward Traffic Channel Rate Set 2, 1800 bps |
| RESERVED | 4 | |

The mobile station shall set the subfields specified in Tables 6.7.4.17-1 and 6.7.4.17-2, corresponding to the Forward Traffic Channel transmission rates supported by the mobile station for this multiplex option to '1', and shall set the remaining subfields to '0'. The mobile station shall set RESERVED to '0000'.

REV_RATES – Reverse Traffic Channel transmission rates.

If REV_RATES is equal to '00000000', then the specified multiplex option in this record indicate the supported multiplex option for the Forward Traffic Channel only. In this case, no further interpretation of the REV_RATES field shall be made. The mobile station shall not set both FOR_RATES and REV_RATES equal to '00000000' in the same information record.

If MULTIPLEX_OPTION is equal to 1, 3, 5, 7, 9, 11, 13, or 15, this field consists of the subfields specified in Table 6.7.4.17-3 which are included in the information record in the order shown in the table. The subfields in Table 6.7.4.17-3 refer to the rates supported on the Fundamental Code Channel of the Reverse Traffic Channel.

**Table 6.7.4.17-3. Reverse Fundamental Traffic Channel Transmission Rates for Rate Set 1**

| Subfield | Length (bits) | Subfield Description |
|---|---|---|
| RS1_9600_REV | 1 | Reverse Traffic Channel Rate Set 1, 9600 bps |
| RS1_4800_REV | 1 | Reverse Traffic Channel Rate Set 1, 4800 bps |
| RS1_2400_REV | 1 | Reverse Traffic Channel Rate Set 1, 2400 bps |
| RS1_1200_REV | 1 | Reverse Traffic Channel Rate Set 1, 1200 bps |
| RESERVED | 4 | |

If MULTIPLEX_OPTION is equal to 2, 4, 6, 8, 10, 12, 14, or 16, this field consists of the subfields specified in Table 6.7.4.17-4 which are included in the information record in the order shown in the table. The subfields in Table 6.7.4.17-4 refer to the rates supported on the Fundamental Code Channel of the Reverse Traffic Channel.

**Table 6.7.4.17-4. Reverse Fundamental Traffic Channel Transmission Rates for Rate Set 2**

| Subfield | Length (bits) | Subfield Description |
|---|---|---|
| RS2_14400_REV | 1 | Reverse Traffic Channel Rate Set 2, 14400 bps |
| RS2_7200_REV | 1 | Reverse Traffic Channel Rate Set 2, 7200 bps |
| RS2_3600_REV | 1 | Reverse Traffic Channel Rate Set 2, 3600 bps |
| RS2_1800_REV | 1 | Reverse Traffic Channel Rate Set 2, 1800 bps |
| RESERVED | 4 | |

The mobile station shall set the subfields specified in Table 6.7.4.17-3 and Table 6.7.4.17-4 corresponding to the Reverse Traffic Channel transmission rates supported by the mobile station for this multiplex option to '1', and shall set the remaining subfields to '0'. The mobile station shall set RESERVED to '0000'.

6.7.4.18 Service Configuration

This record is included in a *Status Response Message* to return the current service configuration, and in a *Service Request Message* and a *Service Response Message* to propose a service configuration.

The mobile station shall use the following variable-length format for the type-specific fields:

| Type-Specific Field | Length (bits) |
|---|---|
| FOR_MUX_OPTION | 16 |
| REV_MUX_OPTION | 16 |
| FOR RATES | 8 |
| REV_RATES | 8 |
| NUM_CON_REC | 8 |
| NUM_CON_REC occurrences of the following record | |
| RECORD_LEN | 8 |
| CON_REF | 8 |
| SERVICE_OPTION | 16 |
| FOR_TRAFFIC | 4 |
| REV_TRAFFIC | 4 |

FOR_MUX_OPTION – Forward Traffic Channel multiplex option.

For a *Status Response Message*, the mobile station shall set this field to the number of the Forward Traffic Channel multiplex option for the current service configuration (e.g., 1 corresponds to Multiplex Option 1).

For a *Service Request Message* and a *Service Response Message*, the mobile station shall set this field to the number of the Forward Traffic Channel multiplex option for the proposed service configuration.

REV_MUX_OPTION – Reverse Traffic Channel multiplex option.

For a *Status Response Message*, the mobile station shall set this field to the number of the Reverse Traffic Channel multiplex option for the current service configuration (e.g., 1 corresponds to Multiplex Option 1).

For a *Service Request Message* and a *Service Response Message*, the mobile station shall set this field to the number of the Reverse Traffic Channel multiplex option for the proposed service configuration.

FOR_RATES – Transmission rates of the Fundamental Code Channel of the Forward Traffic Channel.

The mobile station shall use the Forward Fundamental Code Channel transmission rates specified in 6.7.4.17 for the specified Forward Traffic Channel multiplex option.

For a *Status Response Message*, the mobile station shall set the subfields corresponding to the Forward Traffic Channel transmission rates of the current service configuration to '1', and shall set the remaining subfields to '0'. The mobile station shall set RESERVED to '0000'.

For a *Service Request Message* and a *Service Response Message*, the mobile station shall set the subfields corresponding to the Forward Traffic Channel transmission rates of the proposed service configuration to '1', and shall set the remaining subfields to '0'. The mobile station shall set RESERVED to '0000'.

REV_RATES – Transmission rates of the Fundamental Code Channel of the Reverse Traffic Channel.

The mobile station shall use the Reverse Fundamental Code Channel transmission rates specified in 6.7.4.17 for the specified Reverse Traffic Channel multiplex option.

For a *Status Response Message*, the mobile station shall set the subfields corresponding to the Reverse Traffic Channel transmission rates of the current service configuration to '1', and shall set the remaining subfields to '0'. The mobile station shall set RESERVED to '0000'.

For a *Service Request Message* and a *Service Response Message*, the mobile station shall set the subfields corresponding to the Reverse Traffic Channel transmission rates of the proposed service configuration to '1', and shall set the remaining subfields to '0'. The mobile station shall set RESERVED to '0000'.

NUM_CON_REC – Number of service option connection records.

The mobile station shall set this field to the number of service option connection records included in the message.

For a *Status Response Message*, the mobile station shall include one occurrence of the following five-field record for each service option connection of the current service configuration.

For a *Service Request Message* and a *Service Response Message*, the mobile station shall include one occurrence of the following five-field record for each service option connection of the proposed service configuration.

RECORD_LEN – Service option connection record length.

The mobile station shall set this field to the number of octets included in this service option connection record.

CON_REF – Service option connection reference.

For a *Status Response Message*, the mobile station shall set this field to the service option connection reference.

For a *Service Request Message* and a *Service Response Message*, if the service option connection is part of the current service configuration, the mobile station shall set this field to the service option connection reference; otherwise, the mobile station shall set this field to '00000000'.

SERVICE_OPTION – Service option.

For a *Status Response Message*, the mobile station shall set this field to the service option in use with the service option connection.

For a *Service Request Message* and a *Service Response Message*, the mobile station shall set this field to the service option to be used with the service option connection.

FOR_TRAFFIC – Forward Traffic Channel traffic type.

For a *Status Response Message*, the mobile station shall set this field to the FOR_TRAFFIC code shown in Table 6.7.4.18-1 corresponding to the Forward Traffic Channel traffic type in use with the service option connection.

For a *Service Request Message* and a *Service Response Message*, the mobile station shall set this field to the FOR_TRAFFIC code shown in Table 6.7.4.18-1 corresponding to the Forward Traffic Channel traffic type to be used with the service option connection.

**Table 6.7.4.18-1. FOR_TRAFFIC Codes**

| FOR_TRAFFIC (binary) | Description |
|---|---|
| 0000 | The service option connection does not use Forward Traffic Channel traffic. |
| 0001 | The service option connection uses primary traffic on the Forward Traffic Channel. |
| 0010 | The service option connection uses secondary traffic on the Forward Traffic Channel. |
| All other FOR_TRAFFIC codes are reserved | |

REV_TRAFFIC – Reverse Traffic Channel traffic type.

For a *Status Response Message*, the mobile station shall set this field to the REV_TRAFFIC code shown in Table 6.7.4.18-2 corresponding to the Reverse Traffic Channel traffic type in use with the service option connection.

For a *Service Request Message* and a *Service Response Message*, the mobile station shall set this field to the REV_TRAFFIC code shown in Table 6.7.4.18-2 corresponding to the Reverse Traffic Channel traffic type to be used with the service option connection.

**Table 6.7.4.18-2. REV_TRAFFIC Codes**

| REV_TRAFFIC (binary) | Description |
|---|---|
| 0000 | The service option connection does not use Reverse Traffic Channel traffic. |
| 0001 | The service option connection uses primary traffic on the Reverse Traffic Channel. |
| 0010 | The service option connection uses secondary traffic on the Reverse Traffic Channel. |
| All other REV_TRAFFIC codes are reserved | |

### 6.7.4.19 Called Party Subaddress

This information record identifies the called party subaddress. The mobile station shall use the following variable-length format for the type-specific fields:

| Type-Specific Field | Length (bits) |
|---|---|
| EXTENSION_BIT | 1 |
| SUBADDRESS_TYPE | 3 |
| ODD/EVEN_INDICATOR | 1 |
| RESERVED | 3 |
| Zero or more occurrences of the following field: | |
| CHARi | 8 |

EXTENSION_BIT – The extension bit.

The mobile station shall set this field to '1'.

SUBADDRESS_TYPE – Type of subaddress.

The mobile station shall set this field to the SUBADDRESS_TYPE value shown in Table 6.7.4.19-1 corresponding to the type of the subaddress, as defined in ANSI T1.607 §4.5.8.

**Table 6.7.4.19-1. Subaddress Types**

| Description | SUBADDRESS TYPE (binary) |
|---|---|
| NSAP (CCITT Recommendation X.213/ISO 8348 AD2) | 000 |
| User specified | 010 |
| Reserved | others |

ODD/EVEN INDICATOR – The indicator of odd/even bits.

The mobile station shall set this field to the ODD/EVEN_INDICATOR value shown in Table 6.7.4.19-2 corresponding to the indicator of even/odd bits, as defined in ANSI T1.607 §4.5.8. This field is only used when the type of subaddress is "User specified" and the coding is BCD.

Table 6.7.4.19-2. Odd/Even Indicator

| Description | ODD/EVEN INDICATOR (binary) |
|---|---|
| Even number of address signals | 0 |
| Odd number of address signals | 1 |

RESERVED - Reserved bits.

The mobile station shall set this field to '000'.

CHARi - Character.

The mobile station shall include one occurrence of this field for each character in the called party subaddress.

When the SUBADDRESS_TYPE field is equal to '000', the NSAP address shall be encoded using the preferred binary encoding specified in CCITT Recommendation X.213 or ISO 8348 AD2.

When the SUBADDRESS_TYPE field is set to '010', the user-specified subaddress field is encoded according to the user specification, subject to a maximum length of 20 octets. When interworking with CCITT Recommendation X.25 networks, BCD coding should be applied.

6.7.4.20 Calling Party Subaddress

This information record identifies the calling party subaddress. The mobile station shall use the following variable-length format for the type-specific fields:

| Type-Specific Field | Length (bits) |
|---|---|
| EXTENSION_BIT | 1 |
| SUBADDRESS_TYPE | 3 |
| ODD/EVEN INDICATOR | 1 |
| RESERVED | 3 |
| Zero or more occurrences of the following field: | |
| CHARi | 8 |

EXTENSION_BIT – The extension bit.

The mobile station shall set this field to '1'.

SUBADDRESS_TYPE – Type of subaddress.

The mobile station shall set this field to the SUBADDRESS_TYPE value shown in Table 6.7.4.19-1 corresponding to the type of the subaddress, as defined in ANSI T1.607 §4.5.10.

ODD/EVEN INDICATOR – The indicator of odd/even bits.

The mobile station shall set this field to the ODD/EVEN_INDICATOR value shown in Table 6.7.4.19-2 corresponding to the indicator of even/odd bits, as defined in ANSI T1.607 §4.5.10. It is only used when the type of subaddress is "User specified" and the coding is BCD.

RESERVED – Reserved bits.

The mobile station shall set this field to '000'.

CHARi – Character.

The mobile station shall include one occurrence of this field for each character in the calling party subaddress.

When the SUBADDRESS_TYPE field is equal to '000', the NSAP address shall be encoded using the preferred binary encoding specified in CCITT Recommendation X.213 or ISO 8348 AD2.

When the SUBADDRESS_TYPE field is set to '010', user-specified subaddress field is encoded according to the user specification, subject to a maximum length of 20 octets. When interworking with CCITT Recommendation X.25 networks, BCD coding should be applied.

6.7.4.21 Connected Subaddress

This information record identifies the subaddress of the responding party. The mobile station shall use the following variable-length format for the type-specific fields:

| Type-Specific Field | Length (bits) |
|---|---|
| EXTENSION_BIT | 1 |
| SUBADDRESS_TYPE | 3 |
| ODD/EVEN_INDICATOR | 1 |
| RESERVED | 3 |
| Zero or more occurrences of the following field: | |
| CHARi | 8 |

EXTENSION_BIT – The extension bit.

The mobile station shall set this field to '1'.

SUBADDRESS_TYPE – Type of subaddress.

The mobile station shall set this field to the SUBADDRESS_TYPE value shown in Table 6.7.4.19-1 corresponding to the type of the subaddress, as defined in ANSI T1.607 §4.5.14.

ODD/EVEN INDICATOR – The indicator of odd/even bits.

The mobile station shall set this field to the ODD/EVEN_INDICATOR value shown in Table 6.7.4.19-2 corresponding to the indicator of even/odd bits, as defined in ANSI T1.607 §4.5.14. It is only used when the type of subaddress is "User specified" and the coding is BCD.

RESERVED – Reserved bits.

The mobile station shall set this field to '000'.

CHARi – Character.

The mobile station shall include one occurrence of this field for each character in the connected subaddress.

When the SUBADDRESS_TYPE field is equal to '000', the NSAP address shall be encoded using the preferred binary encoding specified in CCITT Recommendation X.213 or ISO 8348 AD2.

When the SUBADDRESS_TYPE field is set to '010', user-specified subaddress field is encoded according to the user specification, subject to a maximum length of 20 octets. When interworking with CCITT Recommendation X.25 networks, BCD coding should be applied.

### 6.7.4.22 Power Control Information

This information record can be included in a *Status Response Message*, or an *Extended Status Response Message* to return the minimum power control step size supported by the mobile station (see 6.1.2.3.2). The mobile station shall use the following fixed-length format for the type-specific fields:

| **Type-Specific Field** | **Length (bits)** |
|---|---|
| MIN_PWR_CNTL_STEP | 3 |
| RESERVED | 5 |

MIN_PWR_CNTL_STEP – Minimum power control step size

The mobile station shall set this field to the PWR_CNTL_STEP value associated with the minimum closed loop power control step size shown in Table 7.7.3.3.2.25-1 that the mobile station supports.

RESERVED – Reserved bits.

The mobile station shall set this field to '00000'.

### 6.7.4.23 IMSI_M

This information record can be included in a *Status Response Message*, or an *Extended Status Response Message* to return the mobile station's $IMSI\_M_p$. The mobile station shall use the following fixed-length format for the type-specific fields:

| Type-Specific Field | Length (bits) |
|---|---|
| IMSI_M_CLASS | 1 |
| IMSI_M_ADDR_NUM | 3 |
| MCC_M | 10 |
| IMSI_M_11_12 | 7 |
| IMSI_M_S | 34 |
| RESERVED | 1 |

IMSI_M_CLASS – IMSI_M Class assignment of the mobile station.

If the mobile station's IMSI_M is a class 0 IMSI, the mobile station shall set this field to '0'; otherwise, the mobile station shall set this field to '1'.

IMSI_M_ADDR_NUM – Number of $IMSI\_M_p$ address digits.

If the mobile station's IMSI_M is a class 1 IMSI, the mobile station shall set this field to four less than the number of digits in the NMSI; otherwise, the mobile station shall set this field to '000'.

MCC_M – Mobile Country Code of the MIN based IMSI.

The mobile station shall set this field the $MCC\_M_p$. See 6.3.1.

IMSI_M_11_12 – The 11th and 12th digits of IMSI_M.

The mobile station shall set this field to $IMSI\_M\_11\_12_p$. See 6.3.1.

IMSI_M_S – Last ten digits of the IMSI_M.

The mobile station shall set this field to $IMSI\_M\_S_p$. See 6.3.1.

RESERVED – Reserved bit.

The mobile station shall set this field to '0'.

### 6.7.4.24 IMSI_T

This information record can be included in a *Status Response Message*, or an *Extended Status Response Message* to return the mobile station's IMSI_T. The mobile station shall use the following fixed-length format for the type-specific fields:

| Type-Specific Field | Length (bits) |
|---|---|
| IMSI_T_CLASS | 1 |
| IMSI_T_ADDR_NUM | 3 |
| MCC_T | 10 |
| IMSI_T_11_12 | 7 |
| IMSI_T_S | 34 |
| RESERVED | 1 |

IMSI_T_CLASS – IMSI_T Class assignment of the mobile station.

If the mobile station's IMSI_T is a class 0 IMSI, the mobile station shall set this field to '0'; otherwise, the mobile station shall set this field to '1'.

IMSI_T_ADDR_NUM – Number of $IMSI\_T_p$ address digits.

If the mobile station's IMSI_T is a class 1 IMSI, the mobile station shall set this field to four less than the number of digits in the NMSI; otherwise, the mobile station shall set this field to '000'.

MCC_T – Mobile Ccountry Code of the IMSI_T.

The mobile station shall set this field to the $MCC\_T_p$. See 6.3.1.

IMSI_T_11_12 – The 11th and 12th digits of the $IMSI\_T_p$.

The mobile station shall set this field to $IMSI\_T\_11\_12_p$. See 6.3.1.

IMSI_T_S – Last ten digits of the $IMSI\_T_p$.

The mobile station shall set this field to $IMSI\_T\_S_p$. See 6.3.1.

RESERVED – Reserved bit.

The mobile station shall set this field to '0'.

6.7.4.25 Capability Information

This information record identifies whether the following optional or MOB_P_REV dependent features are supported by the mobile station. The mobile station shall use the following fixed-length format for the type-specific fields:

| Type-Specific Field | Length (bits) |
|---|---|
| ACCESS_ENTRY_HO | 1 |
| ACCESS_PROBE_HO | 1 |
| ANALOG_SEARCH | 1 |
| HOPPING_BEACON | 1 |
| MAHHO | 1 |
| PUF | 1 |
| ANALOG_553A | 1 |
| RESERVED | 1 |

ACCESS_ENTRY_HO – Access Entry Handoff Support.

This field identifies the mobile station's support for access entry handoff (see 6.6.2.3). The mobile station shall set this field to '1' if access entry handoff is supported; otherwise this field shall be set to '0'.

ACCESS_PROBE_HO – Access Probe Handoff Support.

This field identifies the mobile station's support for access probe handoff (see 6.6.3.1.3.3). The mobile station shall set this field to '1' if access probe handoff is supported; otherwise this field shall be set to '0'.

ANALOG_SEARCH – Analog Search Support.

This field identifies the mobile station's support for analog searching (see 6.6.6.2.10). The mobile station shall set this field to '1' if analog searching is supported; otherwise this field shall be set to '0'.

HOPPING_BEACON - Hopping Beacon Support.

This field identifies the mobile station's support for hopping pilot beacons. The mobile station shall set this field to '1' if hopping pilot beacons are supported; otherwise, this field shall be set to '0'.

MAHHO - Mobile Assisted Hard Handoff Support.

This field identifies the mobile station's support for mobile assisted hard handoff. The mobile station shall set this field to '1' if the protocol revision level supported by the mobile ($MOB\_P\_REV_p$ of the current band class) is greater than four, or if the protocol revision level ($MOB\_P\_REV_p$ of the current band class) is less than or equal to four and the mobile station supports mobile assisted hard handoff; otherwise, this field shall be set to '0'.

PUF - Location Power Up Function Support.

This field identifies the mobile station's support for location power up function (see 6.6.4.1.7). The mobile station shall set this field to '1' if the protocol revision level supported by the mobile ($MOB\_P\_REV_p$ of the current band class) is greater than four, or if the protocol revision level ($MOB\_P\_REV_p$ of the current band class) is less than or equal to four and the mobile station supports location power up function; otherwise, this field shall be set to '0'.

ANALOG_553A - Analog TIA/EIA-553A Support.

This field identifies the mobile station's compatibility with TIA/EIA-553A. The mobile station shall set this field to '1' if the protocol revision level supported by the mobile ($MOB\_P\_REV_p$ of the current band class) is greater than four, or if the protocol revision level ($MOB\_P\_REV_p$ of the current band class) is less than or equal to four and the mobile station supports TIA/EIA-553A; otherwise, this field shall be set to '0'.

RESERVED - Reserved bit.

The mobile station shall set this field to '0'.

### 6.7.4.26 Extended Record Type - International

The use of this record type is country-specific. The first ten bits of the type-specific fields shall include the Mobile Country Code (MCC) associated with the national standards organization administering the use of the record type. Encoding of the MCC shall be as specified in 6.3.1.3. The remaining six bits of the first two octets of the type-specific fields shall be used to specify the country-specific record type.

# 7 REQUIREMENTS FOR BASE STATION CDMA OPERATION

This section defines requirements that are specific to CDMA base station equipment and operation. See Section 3 and Section 5 for analog base station requirements.

## 7.1 Transmitter

### 7.1.1 Frequency Parameters

#### 7.1.1.1 Channel Spacing and Designation

##### 7.1.1.1.1 Cellular Band

The Band Class 0 system designators for base station transmissions shall be as specified in Table 6.1.1.1.1-1. Base stations supporting Band Class 0 shall support CDMA operations on CDMA Channels as calculated in Table 6.1.1.1.1-2 and as described in Table 6.1.1.1.1-3.

The preferred set of CDMA frequency assignments for Band Class 0 is given in Table 6.1.1.1.1-4.

##### 7.1.1.1.2 PCS Band

The Band Class 1 block designators for base station transmissions shall be as specified in Table 6.1.1.1.2-1. Base stations supporting Band Class 1 shall support CDMA operations on CDMA Channels as calculated in Table 6.1.1.1.2-2 and as described in Table 6.1.1.1.2-3.

The preferred set of CDMA frequency assignments for Band Class 1 is given in Table 6.1.1.1.2-4.

#### 7.1.1.2 Frequency Tolerance

When operating in Band Class 0, the base station shall meet the requirements in Section 10.1.2 of TIA/EIA-97-B. When operating in Band Class 1, the base station shall meet the requirements in Section 4.1.2 of ANSI J-STD-019.

### 7.1.2 Power Output Characteristics

#### 7.1.2.1 Cellular Band

The base station shall not transmit more than 500 watts of effective radiated power (ERP) in any direction in a 1.25 MHz band of the base station's transmit band between 869 and 894 MHz. Maximum ERP and antenna height above average terrain (HAAT) shall be coordinated locally on an ongoing basis.

Current FCC rules shall also apply.

#### 7.1.2.2 PCS Band

The base station shall not transmit more than 1640 watts of effective isotropic radiated power (EIRP) in any direction in a 1.25 MHz band of the base station's transmit band

between 1930 and 1990 MHz for antenna heights above average terrain (HAAT) less than 300 meters. The base station antenna height may exceed 300 meters with a reduction in EIRP according to current FCC rules.

The transmitter output power of the base station in any 1.25 MHz band of the base station's transmit band between 1930 and 1990 MHz and in any direction shall not exceed 100 watts.

Current FCC rules shall also apply.

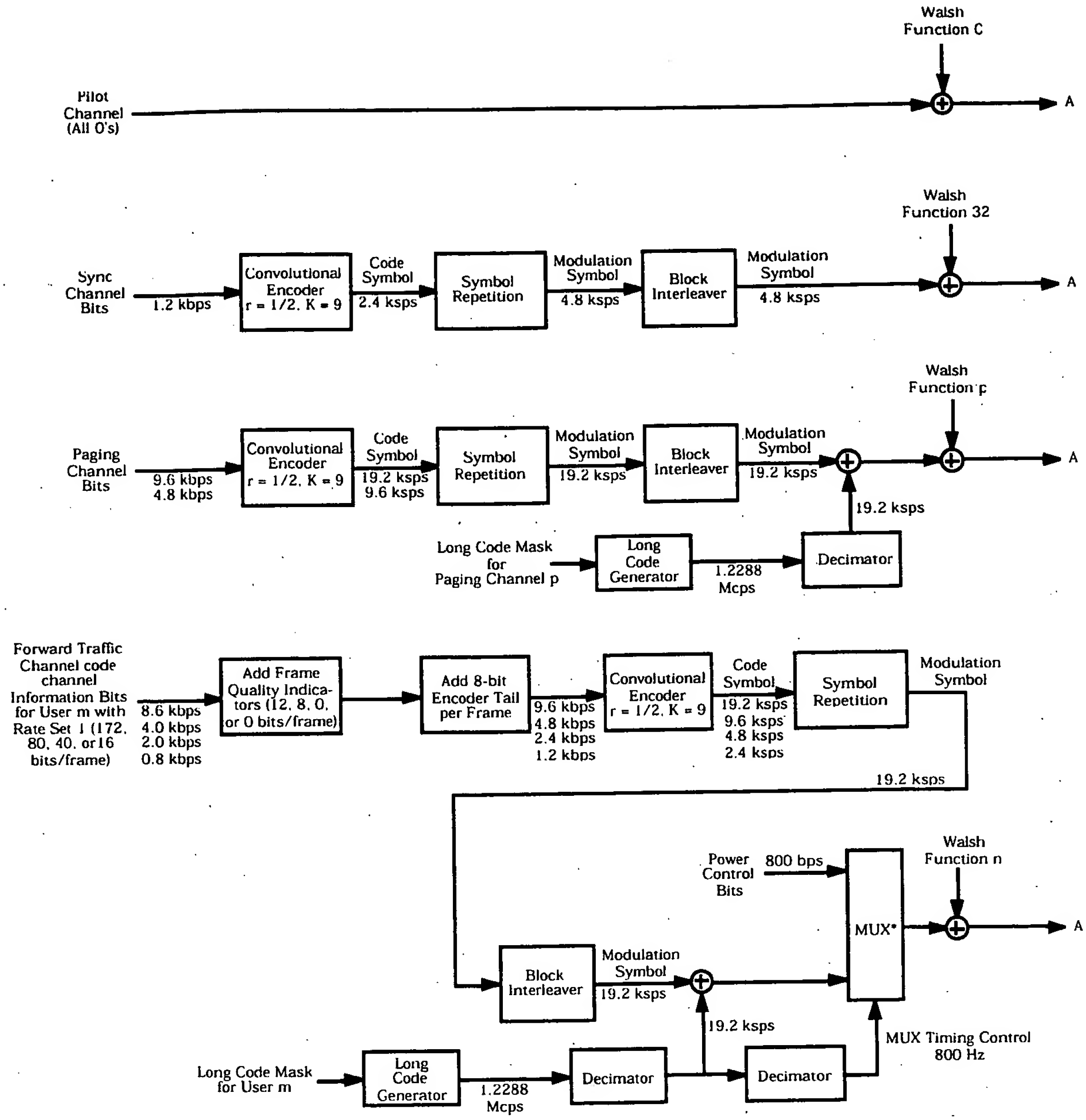
### 7.1.3 Modulation Characteristics

#### 7.1.3.1 Forward CDMA Channel Signals

The Forward CDMA Channel has the overall structure shown in Figure 7.1.3.1-1. The Forward CDMA Channel consists of the following code channels: The Pilot Channel, up to one Sync Channel, up to seven Paging Channels, and a number of Forward Traffic Channels.

Each Forward Traffic Channel contains one Forward Fundamental Code Channel and may contain one to seven Forward Supplemental Code Channels.

Each of these code channels is orthogonally spread by the appropriate Walsh function and is then spread by a quadrature pair of PN sequences at a fixed chip rate of 1.2288 Mcps (million chips/sec). Multiple Forward CDMA Channels may be used within a base station in a frequency division multiplexed manner.




* Power control bits are not multiplexed in for supplemental code channels of the Forward Traffic Channels.

**Figure 7.1.3.1-1. Forward CDMA Channel Structure (Part 1 of 2)**

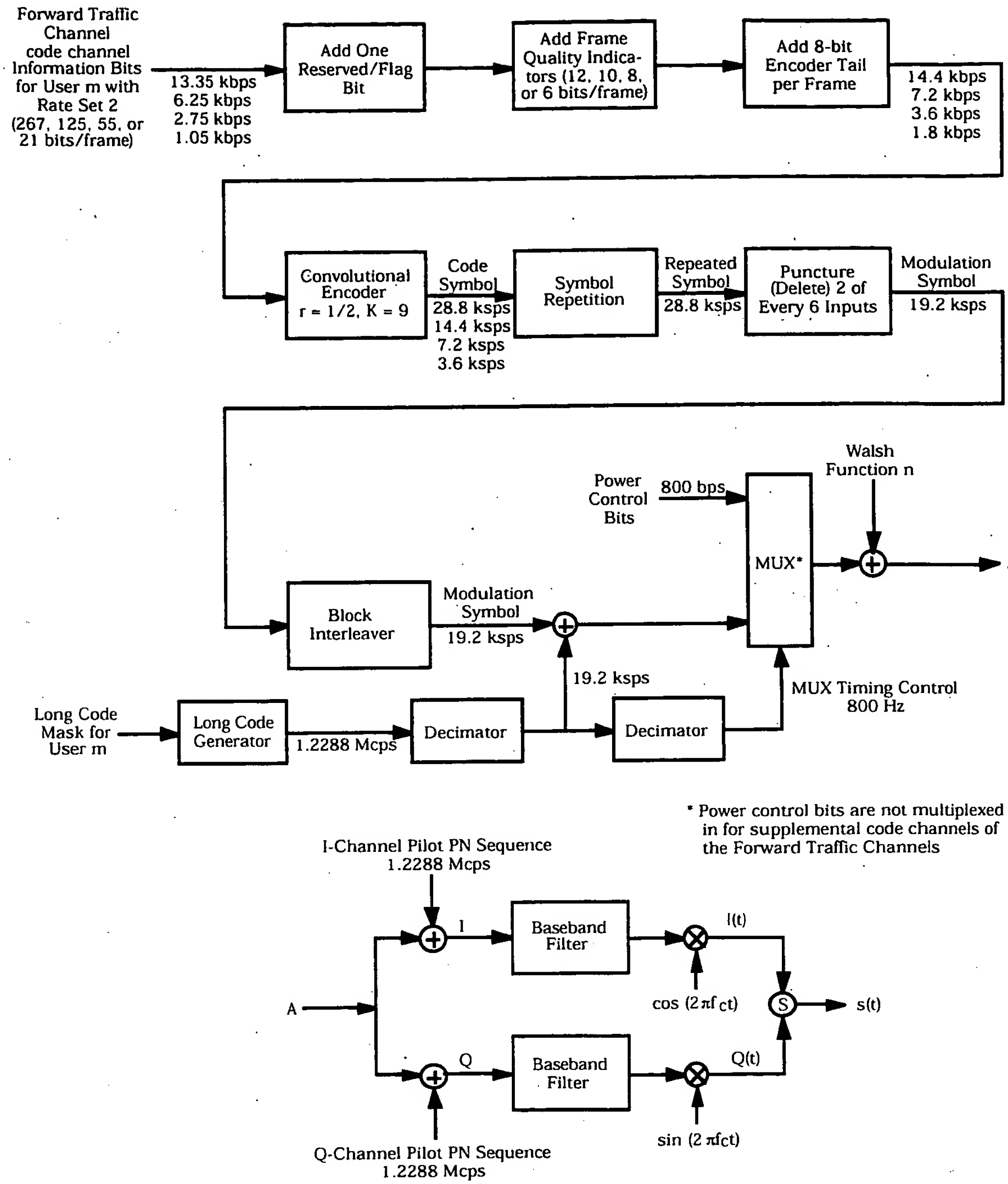



**Figure 7.1.3.1-1. Forward CDMA Channel Structure (Part 2 of 2)**

An example assignment of the code channels transmitted by a base station is shown in Figure 7.1.3.1-2. Out of the 64 code channels available for use, the example depicts the Pilot Channel (always required), one Sync Channel, seven Paging Channels (the maximum number allowed), and 55 code channels for use by Forward Traffic Channels. Another possible configuration could consist of one Pilot Channel, zero Paging Channels, zero Sync Channels, and 63 code channels for use by Forward Traffic Channels.

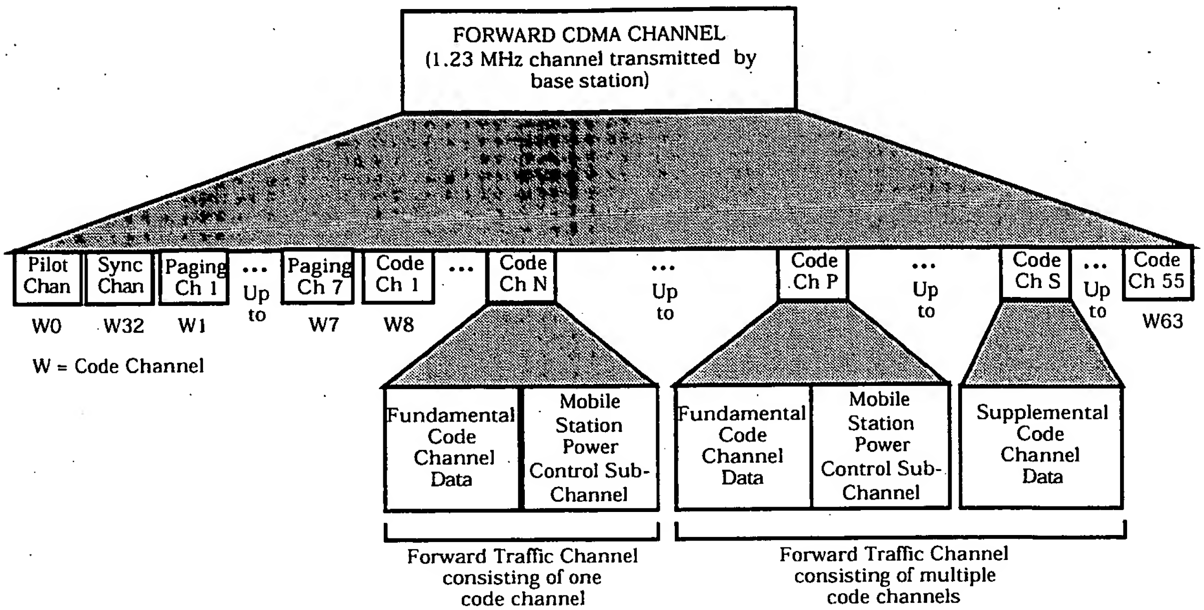



**Figure 7.1.3.1-2. Example of a Forward CDMA Channel Transmitted by a Base Station**

#### 7.1.3.1.1 Modulation Parameters

The modulation parameters for the Forward CDMA Channel are shown in Tables 7.1.3.1.1-1 through 7.1.3.1.1-4.

**Table 7.1.3.1.1-1. Sync Channel Modulation Parameters**

| Parameter | Data Rate (bps) 1200 | Units |
|---|---|---|
| PN Chip Rate | 1.2288 | Mcps |
| Code Rate | 1/2 | bits/code symbol |
| Code Symbol Repetition | 2 | modulation symbols/code symbol* |
| Modulation Symbol Rate | 4,800 | sps |
| PN Chips/Modulation Symbol | 256 | PN chips/modulation symbol |
| PN Chips/Bit | 1024 | PN chips/bit |

*Each repetition of a code symbol is a modulation symbol.

**Table 7.1.3.1.1-2. Paging Channel Modulation Parameters**

| | Data Rate (bps) | | |
|---|---|---|---|
| **Parameter** | **9600** | **4800** | **Units** |
| PN Chip Rate | 1.2288 | 1.2288 | Mcps |
| Code Rate | 1/2 | 1/2 | bits/code symbol |
| Code Symbol Repetition | 1 | 2 | modulation symbols/code symbol* |
| Modulation Symbol Rate | 19,200 | 19,200 | sps |
| PN Chips/Modulation Symbol | 64 | 64 | PN chips/modulation symbol |
| PN Chips/Bit | 128 | 256 | PN chips/bit |

*Each repetition of a code symbol is a modulation symbol.

**Table 7.1.3.1.1-3. Forward Traffic Channel Modulation Parameters for Rate Set 1**

| | Data Rate (bps) | | | | |
|---|---|---|---|---|---|
| **Parameter** | **9600** | **4800** | **2400** | **1200** | **Units** |
| PN Chip Rate | 1.2288 | 1.2288 | 1.2288 | 1.2288 | Mcps |
| Code Rate | 1/2 | 1/2 | 1/2 | 1/2 | bits/code symbol |
| Code Symbol Repetition | 1 | 2 | 4 | 8 | modulation symbols/code symbol* |
| Modulation Symbol Rate | 19,200 | 19,200 | 19,200 | 19,200 | sps |
| PN Chips/Modulation Symbol | 64 | 64 | 64 | 64 | PN chips/ modulation symbol |
| PN Chips/Bit | 128 | 256 | 512 | 1024 | PN chips/bit |

*Each repetition of a code symbol is a modulation symbol.

**Table 7.1.3.1.1-4. Forward Traffic Channel Modulation Parameters for Rate Set 2**

| | Data Rate (bps) | | | | |
|---|---|---|---|---|---|
| **Parameter** | **14400** | **7200** | **3600** | **1800** | **Units** |
| PN Chip Rate | 1.2288 | 1.2288 | 1.2288 | 1.2288 | Mcps |
| Code Rate | 1/2 | 1/2 | 1/2 | 1/2 | bits/code symbol |
| Code Symbol Repetition | 1 | 2 | 4 | 8 | repeated symbols/ code symbol |
| Puncturing Rate | 4/6 | 4/6 | 4/6 | 4/6 | modulation symbols/repeated symbol |
| Effective Code Rate* | 3/4 | 3/4 | 3/4 | 3/4 | |
| Modulation Symbol Rate | 19,200 | 19,200 | 19,200 | 19,200 | sps |
| PN Chips/Modulation Symbol | 64 | 64 | 64 | 64 | PN chips/ modulation symbol |
| PN Chips/Bit | 85.33 | 170.67 | 341.33 | 682.67 | PN chips/bit |

*The effective code rate is the code rate divided by the puncturing rate.

#### 7.1.3.1.2 Data Rates

The Sync Channel shall operate at a fixed rate of 1200 bps. The Paging Channel shall support fixed data rate operation at 9600 or 4800 bps.

The Forward Traffic Channel code channel data rates are grouped into sets called rate sets. Rate Set 1 contains four elements, specifically 9600, 4800, 2400, and 1200 bps. Rate Set 2 contains four elements, specifically 14400, 7200, 3600, and 1800 bps.

The base station shall support Rate Set 1 on the Forward Traffic Channel. The base station may support Rate Set 2 on the Forward Traffic Channel. The base station shall support variable data rate operation with all four elements of each supported rate set.

#### 7.1.3.1.3 Convolutional Encoding

The base station shall convolutionally encode the data transmitted on the Sync Channel, the Paging Channels, and the Forward Traffic Channels. The convolutional code shall have a constraint length of 9. For the Sync Channel, the Paging Channels, and Forward Traffic Channel Rate Set 1, the convolutional code rate shall be 1/2. For Forward Traffic Channel Rate Set 2, an effective code rate of 3/4 is achieved by puncturing two of every six symbols after the symbol repetition (see 7.1.3.1.5).

The generator functions for the rate 1/2 code shall be $g_0$ equals 753 (octal) and $g_1$ equals 561 (octal). This code generates two code symbols for each data bit input to the encoder. These code symbols shall be output so that the code symbol ($c_0$) encoded with generator function $g_0$ is output first, and the code symbol ($c_1$) encoded with generator function $g_1$ is output last. The state of the convolutional encoder, upon initialization, shall be the all-zero state. The first code symbol output after initialization shall be a code symbol encoded with generator function $g_0$.

Convolutional encoding involves the modulo-2 addition of selected taps of a serially time-delayed data sequence. The length of the data sequence delay is equal to K-1, where K is the constraint length of the code. Figure 7.1.3.1.3-1 illustrates the specific K equals 9, rate 1/2 convolutional encoder that is used for these channels.

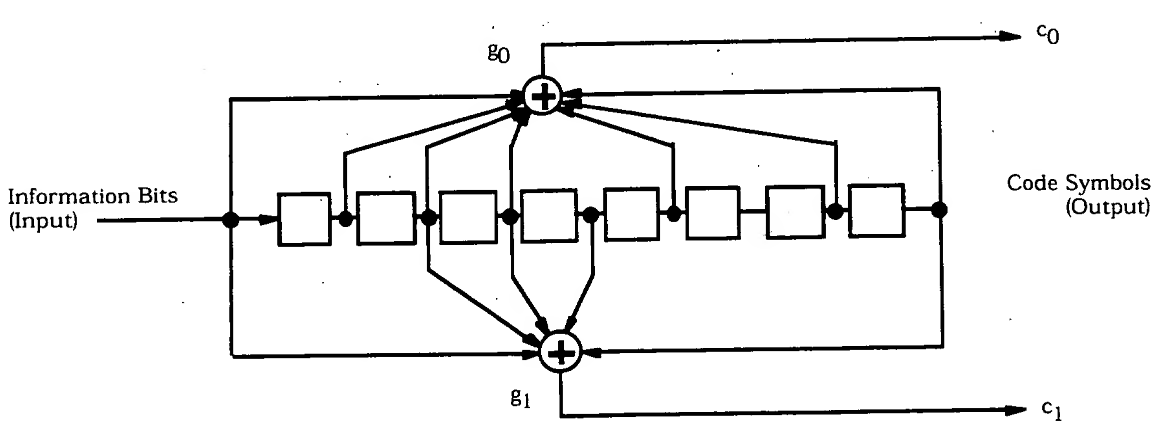



**Figure 7.1.3.1.3-1. K = 9, Rate 1/2 Convolutional Encoder**

#### 7.1.3.1.4 Code Symbol Repetition

For the Sync Channel, each convolutionally encoded symbol shall be repeated 1 time (each symbol occurs 2 consecutive times) prior to block interleaving.

For the Paging Channel, each convolutionally encoded symbol shall be repeated prior to block interleaving whenever the information rate is lower than 9600 bps. Each code symbol at the 4800 bps rate shall be repeated 1 time (each symbol occurs 2 consecutive times).

The code symbol repetition rate on the Forward Traffic Channel code channel varies with data rate. Code symbols shall not be repeated for the 14400 and 9600 bps data rates. Each code symbol at the 7200 and 4800 bps data rates shall be repeated one time (each symbol occurs two consecutive times). Each code symbol at the 3600 and 2400 bps data rates shall be repeated three times (each symbol occurs four consecutive times). Each code symbol at the 1800 and 1200 bps data rates shall be repeated seven times (each symbol occurs eight consecutive times).

#### 7.1.3.1.5 Puncturing

For Forward Traffic Channel Rate Set 2, an effective code rate of 3/4 shall be achieved by puncturing two of every six symbols after the symbol repetition. The effective code rate is the rate of the convolutional code (1/2) divided by the puncturing rate (4/6).

The puncturing pattern shall be '110101', where a '0' means the symbol is deleted and the most significant bit in the pattern corresponds to the first symbol in the six symbol group. This means that the first, second, fourth, and sixth symbols are passed, while the third and the fifth symbols of each consecutive group of six symbols are removed. This puncture pattern shall be repeated 95 times per frame (each pattern occurs 96 consecutive times) and shall begin with the first repeated symbol of the frame.

#### 7.1.3.1.6 Block Interleaving

For the Sync Channel, the Paging Channels, and the Forward Traffic Channels with Rate Set 1, all the symbols after symbol repetition shall be block interleaved. For the Forward Traffic Channels with Rate Set 2, all the symbols after symbol repetition and subsequent puncturing shall be block interleaved.

The Sync Channel shall use a block interleaver spanning 26.666... ms, which is equivalent to 128 modulation symbols at the symbol rate of 4800 sps.[1]

The input (array write) symbol sequence to the Sync Channel interleaver is given in Table 7.1.3.1.6-1. The table is read down by columns from the left to the right; that is, the first input symbol (1) is at the top left, the second input symbol (1) is just below the first input symbol, and the 17th input symbol (9) is just to the right of the first input symbol. The output (array read) symbol sequence shall be as given in Table 7.1.3.1.6-2. The table is

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[1] The Sync Channel symbols are interleaved by a technique that is best described as a bit reversal method.

read in the same way as Table 7.1.3.1.6-1; that is, the first output symbol (1) is at the top left, the second output symbol (33) is just below the first output symbol, and the 17th output symbol (3) is just to the right of the first output symbol.

The Forward Traffic and Paging Channels shall use the identical block interleaver spanning 20 ms, which is equivalent to 384 modulation symbols at the modulation symbol rate of 19200 sps.

The input (array write) and output (array read) symbol sequence for the different data rates shall be as given in Tables 7.1.3.1.6-3 through 7.1.3.1.6-10. These tables are read down by columns from the left to the right as with the Sync Channel interleaver.

In Tables 7.1.3.1.6-1 through 7.1.3.1.6-10, symbols with the same number denote repeated code symbols.

**Table 7.1.3.1.6-1. Sync Channel Interleaver Input (Array Write Operation)**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | 9 | 17 | 25 | 33 | 41 | 49 | 57 |
| 1 | 9 | 17 | 25 | 33 | 41 | 49 | 57 |
| 2 | 10 | 18 | 26 | 34 | 42 | 50 | 58 |
| 2 | 10 | 18 | 26 | 34 | 42 | 50 | 58 |
| 3 | 11 | 19 | 27 | 35 | 43 | 51 | 59 |
| 3 | 11 | 19 | 27 | 35 | 43 | 51 | 59 |
| 4 | 12 | 20 | 28 | 36 | 44 | 52 | 60 |
| 4 | 12 | 20 | 28 | 36 | 44 | 52 | 60 |
| 5 | 13 | 21 | 29 | 37 | 45 | 53 | 61 |
| 5 | 13 | 21 | 29 | 37 | 45 | 53 | 61 |
| 6 | 14 | 22 | 30 | 38 | 46 | 54 | 62 |
| 6 | 14 | 22 | 30 | 38 | 46 | 54 | 62 |
| 7 | 15 | 23 | 31 | 39 | 47 | 55 | 63 |
| 7 | 15 | 23 | 31 | 39 | 47 | 55 | 63 |
| 8 | 16 | 24 | 32 | 40 | 48 | 56 | 64 |
| 8 | 16 | 24 | 32 | 40 | 48 | 56 | 64 |

**Table 7.1.3.1.6-2. Sync Channel Interleaver Output (Array Read Operation)**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | 3 | 2 | 4 | 1 | 3 | 2 | 4 |
| 33 | 35 | 34 | 36 | 33 | 35 | 34 | 36 |
| 17 | 19 | 18 | 20 | 17 | 19 | 18 | 20 |
| 49 | 51 | 50 | 52 | 49 | 51 | 50 | 52 |
| 9 | 11 | 10 | 12 | 9 | 11 | 10 | 12 |
| 41 | 43 | 42 | 44 | 41 | 43 | 42 | 44 |
| 25 | 27 | 26 | 28 | 25 | 27 | 26 | 28 |
| 57 | 59 | 58 | 60 | 57 | 59 | 58 | 60 |
| 5 | 7 | 6 | 8 | 5 | 7 | 6 | 8 |
| 37 | 39 | 38 | 40 | 37 | 39 | 38 | 40 |
| 21 | 23 | 22 | 24 | 21 | 23 | 22 | 24 |
| 53 | 55 | 54 | 56 | 53 | 55 | 54 | 56 |
| 13 | 15 | 14 | 16 | 13 | 15 | 14 | 16 |
| 45 | 47 | 46 | 48 | 45 | 47 | 46 | 48 |
| 29 | 31 | 30 | 32 | 29 | 31 | 30 | 32 |
| 61 | 63 | 62 | 64 | 61 | 63 | 62 | 64 |

**Table 7.1.3.1.6-3. Forward Traffic Channel for 14400, 9600, 7200, 3600, and 1800 bps and Paging Channel for 9600 bps Interleaver Input (Array Write Operation)**

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 25 | 49 | 73 | 97 | 121 | 145 | 169 | 193 | 217 | 241 | 265 | 289 | 313 | 337 | 361 |
| 2 | 26 | 50 | 74 | 98 | 122 | 146 | 170 | 194 | 218 | 242 | 266 | 290 | 314 | 338 | 362 |
| 3 | 27 | 51 | 75 | 99 | 123 | 147 | 171 | 195 | 219 | 243 | 267 | 291 | 315 | 339 | 363 |
| 4 | 28 | 52 | 76 | 100 | 124 | 148 | 172 | 196 | 220 | 244 | 268 | 292 | 316 | 340 | 364 |
| 5 | 29 | 53 | 77 | 101 | 125 | 149 | 173 | 197 | 221 | 245 | 269 | 293 | 317 | 341 | 365 |
| 6 | 30 | 54 | 78 | 102 | 126 | 150 | 174 | 198 | 222 | 246 | 270 | 294 | 318 | 342 | 366 |
| 7 | 31 | 55 | 79 | 103 | 127 | 151 | 175 | 199 | 223 | 247 | 271 | 295 | 319 | 343 | 367 |
| 8 | 32 | 56 | 80 | 104 | 128 | 152 | 176 | 200 | 224 | 248 | 272 | 296 | 320 | 344 | 368 |
| 9 | 33 | 57 | 81 | 105 | 129 | 153 | 177 | 201 | 225 | 249 | 273 | 297 | 321 | 345 | 369 |
| 10 | 34 | 58 | 82 | 106 | 130 | 154 | 178 | 202 | 226 | 250 | 274 | 298 | 322 | 346 | 370 |
| 11 | 35 | 59 | 83 | 107 | 131 | 155 | 179 | 203 | 227 | 251 | 275 | 299 | 323 | 347 | 371 |
| 12 | 36 | 60 | 84 | 108 | 132 | 156 | 180 | 204 | 228 | 252 | 276 | 300 | 324 | 348 | 372 |
| 13 | 37 | 61 | 85 | 109 | 133 | 157 | 181 | 205 | 229 | 253 | 277 | 301 | 325 | 349 | 373 |
| 14 | 38 | 62 | 86 | 110 | 134 | 158 | 182 | 206 | 230 | 254 | 278 | 302 | 326 | 350 | 374 |
| 15 | 39 | 63 | 87 | 111 | 135 | 159 | 183 | 207 | 231 | 255 | 279 | 303 | 327 | 351 | 375 |
| 16 | 40 | 64 | 88 | 112 | 136 | 160 | 184 | 208 | 232 | 256 | 280 | 304 | 328 | 352 | 376 |
| 17 | 41 | 65 | 89 | 113 | 137 | 161 | 185 | 209 | 233 | 257 | 281 | 305 | 329 | 353 | 377 |
| 18 | 42 | 66 | 90 | 114 | 138 | 162 | 186 | 210 | 234 | 258 | 282 | 306 | 330 | 354 | 378 |
| 19 | 43 | 67 | 91 | 115 | 139 | 163 | 187 | 211 | 235 | 259 | 283 | 307 | 331 | 355 | 379 |
| 20 | 44 | 68 | 92 | 116 | 140 | 164 | 188 | 212 | 236 | 260 | 284 | 308 | 332 | 356 | 380 |
| 21 | 45 | 69 | 93 | 117 | 141 | 165 | 189 | 213 | 237 | 261 | 285 | 309 | 333 | 357 | 381 |
| 22 | 46 | 70 | 94 | 118 | 142 | 166 | 190 | 214 | 238 | 262 | 286 | 310 | 334 | 358 | 382 |
| 23 | 47 | 71 | 95 | 119 | 143 | 167 | 191 | 215 | 239 | 263 | 287 | 311 | 335 | 359 | 383 |
| 24 | 48 | 72 | 96 | 120 | 144 | 168 | 192 | 216 | 240 | 264 | 288 | 312 | 336 | 360 | 384 |

**Table 7.1.3.1.6-4. Forward Traffic Channel for 14400, 9600, 7200, 3600, and 1800 bps and Paging Channel for 9600 bps Interleaver Output (Array Read Operation)**

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 9 | 5 | 13 | 3 | 11 | 7 | 15 | 2 | 10 | 6 | 14 | 4 | 12 | 8 | 16 |
| 65 | 73 | 69 | 77 | 67 | 75 | 71 | 79 | 66 | 74 | 70 | 78 | 68 | 76 | 72 | 80 |
| 129 | 137 | 133 | 141 | 131 | 139 | 135 | 143 | 130 | 138 | 134 | 142 | 132 | 140 | 136 | 144 |
| 193 | 201 | 197 | 205 | 195 | 203 | 199 | 207 | 194 | 202 | 198 | 206 | 196 | 204 | 200 | 208 |
| 257 | 265 | 261 | 269 | 259 | 267 | 263 | 271 | 258 | 266 | 262 | 270 | 260 | 268 | 264 | 272 |
| 321 | 329 | 325 | 333 | 323 | 331 | 327 | 335 | 322 | 330 | 326 | 334 | 324 | 332 | 328 | 336 |
| 33 | 41 | 37 | 45 | 35 | 43 | 39 | 47 | 34 | 42 | 38 | 46 | 36 | 44 | 40 | 48 |
| 97 | 105 | 101 | 109 | 99 | 107 | 103 | 111 | 98 | 106 | 102 | 110 | 100 | 108 | 104 | 112 |
| 161 | 169 | 165 | 173 | 163 | 171 | 167 | 175 | 162 | 170 | 166 | 174 | 164 | 172 | 168 | 176 |
| 225 | 233 | 229 | 237 | 227 | 235 | 231 | 239 | 226 | 234 | 230 | 238 | 228 | 236 | 232 | 240 |
| 289 | 297 | 293 | 301 | 291 | 299 | 295 | 303 | 290 | 298 | 294 | 302 | 292 | 300 | 296 | 304 |
| 353 | 361 | 357 | 365 | 355 | 363 | 359 | 367 | 354 | 362 | 358 | 366 | 356 | 364 | 360 | 368 |
| 17 | 25 | 21 | 29 | 19 | 27 | 23 | 31 | 18 | 26 | 22 | 30 | 20 | 28 | 24 | 32 |
| 81 | 89 | 85 | 93 | 83 | 91 | 87 | 95 | 82 | 90 | 86 | 94 | 84 | 92 | 88 | 96 |
| 145 | 153 | 149 | 157 | 147 | 155 | 151 | 159 | 146 | 154 | 150 | 158 | 148 | 156 | 152 | 160 |
| 209 | 217 | 213 | 221 | 211 | 219 | 215 | 223 | 210 | 218 | 214 | 222 | 212 | 220 | 216 | 224 |
| 273 | 281 | 277 | 285 | 275 | 283 | 279 | 287 | 274 | 282 | 278 | 286 | 276 | 284 | 280 | 288 |
| 337 | 345 | 341 | 349 | 339 | 347 | 343 | 351 | 338 | 346 | 342 | 350 | 340 | 348 | 344 | 352 |
| 49 | 57 | 53 | 61 | 51 | 59 | 55 | 63 | 50 | 58 | 54 | 62 | 52 | 60 | 56 | 64 |
| 113 | 121 | 117 | 125 | 115 | 123 | 119 | 127 | 114 | 122 | 118 | 126 | 116 | 124 | 120 | 128 |
| 177 | 185 | 181 | 189 | 179 | 187 | 183 | 191 | 178 | 186 | 182 | 190 | 180 | 188 | 184 | 192 |
| 241 | 249 | 245 | 253 | 243 | 251 | 247 | 255 | 242 | 250 | 246 | 254 | 244 | 252 | 248 | 256 |
| 305 | 313 | 309 | 317 | 307 | 315 | 311 | 319 | 306 | 314 | 310 | 318 | 308 | 316 | 312 | 320 |
| 369 | 377 | 373 | 381 | 371 | 379 | 375 | 383 | 370 | 378 | 374 | 382 | 372 | 380 | 376 | 384 |

**Table 7.1.3.1.6-5. Forward Traffic Channel for 4800 bps and Paging Channel for 4800 bps Interleaver Input (Array Write Operation)**

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 13 | 25 | 37 | 49 | 61 | 73 | 85 | 97 | 109 | 121 | 133 | 145 | 157 | 169 | 181 |
| 1 | 13 | 25 | 37 | 49 | 61 | 73 | 85 | 97 | 109 | 121 | 133 | 145 | 157 | 169 | 181 |
| 2 | 14 | 26 | 38 | 50 | 62 | 74 | 86 | 98 | 110 | 122 | 134 | 146 | 158 | 170 | 182 |
| 2 | 14 | 26 | 38 | 50 | 62 | 74 | 86 | 98 | 110 | 122 | 134 | 146 | 158 | 170 | 182 |
| 3 | 15 | 27 | 39 | 51 | 63 | 75 | 87 | 99 | 111 | 123 | 135 | 147 | 159 | 171 | 183 |
| 3 | 15 | 27 | 39 | 51 | 63 | 75 | 87 | 99 | 111 | 123 | 135 | 147 | 159 | 171 | 183 |
| 4 | 16 | 28 | 40 | 52 | 64 | 76 | 88 | 100 | 112 | 124 | 136 | 148 | 160 | 172 | 184 |
| 4 | 16 | 28 | 40 | 52 | 64 | 76 | 88 | 100 | 112 | 124 | 136 | 148 | 160 | 172 | 184 |
| 5 | 17 | 29 | 41 | 53 | 65 | 77 | 89 | 101 | 113 | 125 | 137 | 149 | 161 | 173 | 185 |
| 5 | 17 | 29 | 41 | 53 | 65 | 77 | 89 | 101 | 113 | 125 | 137 | 149 | 161 | 173 | 185 |
| 6 | 18 | 30 | 42 | 54 | 66 | 78 | 90 | 102 | 114 | 126 | 138 | 150 | 162 | 174 | 186 |
| 6 | 18 | 30 | 42 | 54 | 66 | 78 | 90 | 102 | 114 | 126 | 138 | 150 | 162 | 174 | 186 |
| 7 | 19 | 31 | 43 | 55 | 67 | 79 | 91 | 103 | 115 | 127 | 139 | 151 | 163 | 175 | 187 |
| 7 | 19 | 31 | 43 | 55 | 67 | 79 | 91 | 103 | 115 | 127 | 139 | 151 | 163 | 175 | 187 |
| 8 | 20 | 32 | 44 | 56 | 68 | 80 | 92 | 104 | 116 | 128 | 140 | 152 | 164 | 176 | 188 |
| 8 | 20 | 32 | 44 | 56 | 68 | 80 | 92 | 104 | 116 | 128 | 140 | 152 | 164 | 176 | 188 |
| 9 | 21 | 33 | 45 | 57 | 69 | 81 | 93 | 105 | 117 | 129 | 141 | 153 | 165 | 177 | 189 |
| 9 | 21 | 33 | 45 | 57 | 69 | 81 | 93 | 105 | 117 | 129 | 141 | 153 | 165 | 177 | 189 |
| 10 | 22 | 34 | 46 | 58 | 70 | 82 | 94 | 106 | 118 | 130 | 142 | 154 | 166 | 178 | 190 |
| 10 | 22 | 34 | 46 | 58 | 70 | 82 | 94 | 106 | 118 | 130 | 142 | 154 | 166 | 178 | 190 |
| 11 | 23 | 35 | 47 | 59 | 71 | 83 | 95 | 107 | 119 | 131 | 143 | 155 | 167 | 179 | 191 |
| 11 | 23 | 35 | 47 | 59 | 71 | 83 | 95 | 107 | 119 | 131 | 143 | 155 | 167 | 179 | 191 |
| 12 | 24 | 36 | 48 | 60 | 72 | 84 | 96 | 108 | 120 | 132 | 144 | 156 | 168 | 180 | 192 |
| 12 | 24 | 36 | 48 | 60 | 72 | 84 | 96 | 108 | 120 | 132 | 144 | 156 | 168 | 180 | 192 |

**Table 7.1.3.1.6-6. Forward Traffic Channel for 4800 bps and Paging Channel for 4800 bps Interleaver Output (Array Read Operation)**

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5 | 3 | 7 | 2 | 6 | 4 | 8 | 1 | 5 | 3 | 7 | 2 | 6 | 4 | 8 |
| 33 | 37 | 35 | 39 | 34 | 38 | 36 | 40 | 33 | 37 | 35 | 39 | 34 | 38 | 36 | 40 |
| 65 | 69 | 67 | 71 | 66 | 70 | 68 | 72 | 65 | 69 | 67 | 71 | 66 | 70 | 68 | 72 |
| 97 | 101 | 99 | 103 | 98 | 102 | 100 | 104 | 97 | 101 | 99 | 103 | 98 | 102 | 100 | 104 |
| 129 | 133 | 131 | 135 | 130 | 134 | 132 | 136 | 129 | 133 | 131 | 135 | 130 | 134 | 132 | 136 |
| 161 | 165 | 163 | 167 | 162 | 166 | 164 | 168 | 161 | 165 | 163 | 167 | 162 | 166 | 164 | 168 |
| 17 | 21 | 19 | 23 | 18 | 22 | 20 | 24 | 17 | 21 | 19 | 23 | 18 | 22 | 20 | 24 |
| 49 | 53 | 51 | 55 | 50 | 54 | 52 | 56 | 49 | 53 | 51 | 55 | 50 | 54 | 52 | 56 |
| 81 | 85 | 83 | 87 | 82 | 86 | 84 | 88 | 81 | 85 | 83 | 87 | 82 | 86 | 84 | 88 |
| 113 | 117 | 115 | 119 | 114 | 118 | 116 | 120 | 113 | 117 | 115 | 119 | 114 | 118 | 116 | 120 |
| 145 | 149 | 147 | 151 | 146 | 150 | 148 | 152 | 145 | 149 | 147 | 151 | 146 | 150 | 148 | 152 |
| 177 | 181 | 179 | 183 | 178 | 182 | 180 | 184 | 177 | 181 | 179 | 183 | 178 | 182 | 180 | 184 |
| 9 | 13 | 11 | 15 | 10 | 14 | 12 | 16 | 9 | 13 | 11 | 15 | 10 | 14 | 12 | 16 |
| 41 | 45 | 43 | 47 | 42 | 46 | 44 | 48 | 41 | 45 | 43 | 47 | 42 | 46 | 44 | 48 |
| 73 | 77 | 75 | 79 | 74 | 78 | 76 | 80 | 73 | 77 | 75 | 79 | 74 | 78 | 76 | 80 |
| 105 | 109 | 107 | 111 | 106 | 110 | 108 | 112 | 105 | 109 | 107 | 111 | 106 | 110 | 108 | 112 |
| 137 | 141 | 139 | 143 | 138 | 142 | 140 | 144 | 137 | 141 | 139 | 143 | 138 | 142 | 140 | 144 |
| 169 | 173 | 171 | 175 | 170 | 174 | 172 | 176 | 169 | 173 | 171 | 175 | 170 | 174 | 172 | 176 |
| 25 | 29 | 27 | 31 | 26 | 30 | 28 | 32 | 25 | 29 | 27 | 31 | 26 | 30 | 28 | 32 |
| 57 | 61 | 59 | 63 | 58 | 62 | 60 | 64 | 57 | 61 | 59 | 63 | 58 | 62 | 60 | 64 |
| 89 | 93 | 91 | 95 | 90 | 94 | 92 | 96 | 89 | 93 | 91 | 95 | 90 | 94 | 92 | 96 |
| 121 | 125 | 123 | 127 | 122 | 126 | 124 | 128 | 121 | 125 | 123 | 127 | 122 | 126 | 124 | 128 |
| 153 | 157 | 155 | 159 | 154 | 158 | 156 | 160 | 153 | 157 | 155 | 159 | 154 | 158 | 156 | 160 |
| 185 | 189 | 187 | 191 | 186 | 190 | 188 | 192 | 185 | 189 | 187 | 191 | 186 | 190 | 188 | 192 |

**Table 7.1.3.1.6-7. Forward Traffic Channel for 2400 bps Interleaver Input (Array Write Operation)**

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7 | 13 | 19 | 25 | 31 | 37 | 43 | 49 | 55 | 61 | 67 | 73 | 79 | 85 | 91 |
| 1 | 7 | 13 | 19 | 25 | 31 | 37 | 43 | 49 | 55 | 61 | 67 | 73 | 79 | 85 | 91 |
| 1 | 7 | 13 | 19 | 25 | 31 | 37 | 43 | 49 | 55 | 61 | 67 | 73 | 79 | 85 | 91 |
| 1 | 7 | 13 | 19 | 25 | 31 | 37 | 43 | 49 | 55 | 61 | 67 | 73 | 79 | 85 | 91 |
| 2 | 8 | 14 | 20 | 26 | 32 | 38 | 44 | 50 | 56 | 62 | 68 | 74 | 80 | 86 | 92 |
| 2 | 8 | 14 | 20 | 26 | 32 | 38 | 44 | 50 | 56 | 62 | 68 | 74 | 80 | 86 | 92 |
| 2 | 8 | 14 | 20 | 26 | 32 | 38 | 44 | 50 | 56 | 62 | 68 | 74 | 80 | 86 | 92 |
| 2 | 8 | 14 | 20 | 26 | 32 | 38 | 44 | 50 | 56 | 62 | 68 | 74 | 80 | 86 | 92 |
| 3 | 9 | 15 | 21 | 27 | 33 | 39 | 45 | 51 | 57 | 63 | 69 | 75 | 81 | 87 | 93 |
| 3 | 9 | 15 | 21 | 27 | 33 | 39 | 45 | 51 | 57 | 63 | 69 | 75 | 81 | 87 | 93 |
| 3 | 9 | 15 | 21 | 27 | 33 | 39 | 45 | 51 | 57 | 63 | 69 | 75 | 81 | 87 | 93 |
| 3 | 9 | 15 | 21 | 27 | 33 | 39 | 45 | 51 | 57 | 63 | 69 | 75 | 81 | 87 | 93 |
| 4 | 10 | 16 | 22 | 28 | 34 | 40 | 46 | 52 | 58 | 64 | 70 | 76 | 82 | 88 | 94 |
| 4 | 10 | 16 | 22 | 28 | 34 | 40 | 46 | 52 | 58 | 64 | 70 | 76 | 82 | 88 | 94 |
| 4 | 10 | 16 | 22 | 28 | 34 | 40 | 46 | 52 | 58 | 64 | 70 | 76 | 82 | 88 | 94 |
| 4 | 10 | 16 | 22 | 28 | 34 | 40 | 46 | 52 | 58 | 64 | 70 | 76 | 82 | 88 | 94 |
| 5 | 11 | 17 | 23 | 29 | 35 | 41 | 47 | 53 | 59 | 65 | 71 | 77 | 83 | 89 | 95 |
| 5 | 11 | 17 | 23 | 29 | 35 | 41 | 47 | 53 | 59 | 65 | 71 | 77 | 83 | 89 | 95 |
| 5 | 11 | 17 | 23 | 29 | 35 | 41 | 47 | 53 | 59 | 65 | 71 | 77 | 83 | 89 | 95 |
| 5 | 11 | 17 | 23 | 29 | 35 | 41 | 47 | 53 | 59 | 65 | 71 | 77 | 83 | 89 | 95 |
| 6 | 12 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60 | 66 | 72 | 78 | 84 | 90 | 96 |
| 6 | 12 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60 | 66 | 72 | 78 | 84 | 90 | 96 |
| 6 | 12 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60 | 66 | 72 | 78 | 84 | 90 | 96 |
| 6 | 12 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60 | 66 | 72 | 78 | 84 | 90 | 96 |

**Table 7.1.3.1.6-8. Forward Traffic Channel for 2400 bps Interleaver Output (Array Read Operation)**

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3 | 2 | 4 | 1 | 3 | 2 | 4 | 1 | 3 | 2 | 4 | 1 | 3 | 2 | 4 |
| 17 | 19 | 18 | 20 | 17 | 19 | 18 | 20 | 17 | 19 | 18 | 20 | 17 | 19 | 18 | 20 |
| 33 | 35 | 34 | 36 | 33 | 35 | 34 | 36 | 33 | 35 | 34 | 36 | 33 | 35 | 34 | 36 |
| 49 | 51 | 50 | 52 | 49 | 51 | 50 | 52 | 49 | 51 | 50 | 52 | 49 | 51 | 50 | 52 |
| 65 | 67 | 66 | 68 | 65 | 67 | 66 | 68 | 65 | 67 | 66 | 68 | 65 | 67 | 66 | 68 |
| 81 | 83 | 82 | 84 | 81 | 83 | 82 | 84 | 81 | 83 | 82 | 84 | 81 | 83 | 82 | 84 |
| 9 | 11 | 10 | 12 | 9 | 11 | 10 | 12 | 9 | 11 | 10 | 12 | 9 | 11 | 10 | 12 |
| 25 | 27 | 26 | 28 | 25 | 27 | 26 | 28 | 25 | 27 | 26 | 28 | 25 | 27 | 26 | 28 |
| 41 | 43 | 42 | 44 | 41 | 43 | 42 | 44 | 41 | 43 | 42 | 44 | 41 | 43 | 42 | 44 |
| 57 | 59 | 58 | 60 | 57 | 59 | 58 | 60 | 57 | 59 | 58 | 60 | 57 | 59 | 58 | 60 |
| 73 | 75 | 74 | 76 | 73 | 75 | 74 | 76 | 73 | 75 | 74 | 76 | 73 | 75 | 74 | 76 |
| 89 | 91 | 90 | 92 | 89 | 91 | 90 | 92 | 89 | 91 | 90 | 92 | 89 | 91 | 90 | 92 |
| 5 | 7 | 6 | 8 | 5 | 7 | 6 | 8 | 5 | 7 | 6 | 8 | 5 | 7 | 6 | 8 |
| 21 | 23 | 22 | 24 | 21 | 23 | 22 | 24 | 21 | 23 | 22 | 24 | 21 | 23 | 22 | 24 |
| 37 | 39 | 38 | 40 | 37 | 39 | 38 | 40 | 37 | 39 | 38 | 40 | 37 | 39 | 38 | 40 |
| 53 | 55 | 54 | 56 | 53 | 55 | 54 | 56 | 53 | 55 | 54 | 56 | 53 | 55 | 54 | 56 |
| 69 | 71 | 70 | 72 | 69 | 71 | 70 | 72 | 69 | 71 | 70 | 72 | 69 | 71 | 70 | 72 |
| 85 | 87 | 86 | 88 | 85 | 87 | 86 | 88 | 85 | 87 | 86 | 88 | 85 | 87 | 86 | 88 |
| 13 | 15 | 14 | 16 | 13 | 15 | 14 | 16 | 13 | 15 | 14 | 16 | 13 | 15 | 14 | 16 |
| 29 | 31 | 30 | 32 | 29 | 31 | 30 | 32 | 29 | 31 | 30 | 32 | 29 | 31 | 30 | 32 |
| 45 | 47 | 46 | 48 | 45 | 47 | 46 | 48 | 45 | 47 | 46 | 48 | 45 | 47 | 46 | 48 |
| 61 | 63 | 62 | 64 | 61 | 63 | 62 | 64 | 61 | 63 | 62 | 64 | 61 | 63 | 62 | 64 |
| 77 | 79 | 78 | 80 | 77 | 79 | 78 | 80 | 77 | 79 | 78 | 80 | 77 | 79 | 78 | 80 |
| 93 | 95 | 94 | 96 | 93 | 95 | 94 | 96 | 93 | 95 | 94 | 96 | 93 | 95 | 94 | 96 |

**Table 7.1.3.1.6-9. Forward Traffic Channel for 1200 bps Interleaver Input (Array Write Operation)**

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 4 | 7 | 10 | 13 | 16 | 19 | 22 | 25 | 28 | 31 | 34 | 37 | 40 | 43 | 46 |
| 1 | 4 | 7 | 10 | 13 | 16 | 19 | 22 | 25 | 28 | 31 | 34 | 37 | 40 | 43 | 46 |
| 1 | 4 | 7 | 10 | 13 | 16 | 19 | 22 | 25 | 28 | 31 | 34 | 37 | 40 | 43 | 46 |
| 1 | 4 | 7 | 10 | 13 | 16 | 19 | 22 | 25 | 28 | 31 | 34 | 37 | 40 | 43 | 46 |
| 1 | 4 | 7 | 10 | 13 | 16 | 19 | 22 | 25 | 28 | 31 | 34 | 37 | 40 | 43 | 46 |
| 1 | 4 | 7 | 10 | 13 | 16 | 19 | 22 | 25 | 28 | 31 | 34 | 37 | 40 | 43 | 46 |
| 1 | 4 | 7 | 10 | 13 | 16 | 19 | 22 | 25 | 28 | 31 | 34 | 37 | 40 | 43 | 46 |
| 1 | 4 | 7 | 10 | 13 | 16 | 19 | 22 | 25 | 28 | 31 | 34 | 37 | 40 | 43 | 46 |
| 2 | 5 | 8 | 11 | 14 | 17 | 20 | 23 | 26 | 29 | 32 | 35 | 38 | 41 | 44 | 47 |
| 2 | 5 | 8 | 11 | 14 | 17 | 20 | 23 | 26 | 29 | 32 | 35 | 38 | 41 | 44 | 47 |
| 2 | 5 | 8 | 11 | 14 | 17 | 20 | 23 | 26 | 29 | 32 | 35 | 38 | 41 | 44 | 47 |
| 2 | 5 | 8 | 11 | 14 | 17 | 20 | 23 | 26 | 29 | 32 | 35 | 38 | 41 | 44 | 47 |
| 2 | 5 | 8 | 11 | 14 | 17 | 20 | 23 | 26 | 29 | 32 | 35 | 38 | 41 | 44 | 47 |
| 2 | 5 | 8 | 11 | 14 | 17 | 20 | 23 | 26 | 29 | 32 | 35 | 38 | 41 | 44 | 47 |
| 2 | 5 | 8 | 11 | 14 | 17 | 20 | 23 | 26 | 29 | 32 | 35 | 38 | 41 | 44 | 47 |
| 2 | 5 | 8 | 11 | 14 | 17 | 20 | 23 | 26 | 29 | 32 | 35 | 38 | 41 | 44 | 47 |
| 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27 | 30 | 33 | 36 | 39 | 42 | 45 | 48 |
| 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27 | 30 | 33 | 36 | 39 | 42 | 45 | 48 |
| 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27 | 30 | 33 | 36 | 39 | 42 | 45 | 48 |
| 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27 | 30 | 33 | 36 | 39 | 42 | 45 | 48 |
| 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27 | 30 | 33 | 36 | 39 | 42 | 45 | 48 |
| 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27 | 30 | 33 | 36 | 39 | 42 | 45 | 48 |
| 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27 | 30 | 33 | 36 | 39 | 42 | 45 | 48 |
| 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27 | 30 | 33 | 36 | 39 | 42 | 45 | 48 |

**Table 7.1.3.1.6-10. Forward Traffic Channel for 1200 bps Interleaver Output (Array Read Operation)**

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| 9 | 10 | 9 | 10 | 9 | 10 | 9 | 10 | 9 | 10 | 9 | 10 | 9 | 10 | 9 | 10 |
| 17 | 18 | 17 | 18 | 17 | 18 | 17 | 18 | 17 | 18 | 17 | 18 | 17 | 18 | 17 | 18 |
| 25 | 26 | 25 | 26 | 25 | 26 | 25 | 26 | 25 | 26 | 25 | 26 | 25 | 26 | 25 | 26 |
| 33 | 34 | 33 | 34 | 33 | 34 | 33 | 34 | 33 | 34 | 33 | 34 | 33 | 34 | 33 | 34 |
| 41 | 42 | 41 | 42 | 41 | 42 | 41 | 42 | 41 | 42 | 41 | 42 | 41 | 42 | 41 | 42 |
| 5 | 6 | 5 | 6 | 5 | 6 | 5 | 6 | 5 | 6 | 5 | 6 | 5 | 6 | 5 | 6 |
| 13 | 14 | 13 | 14 | 13 | 14 | 13 | 14 | 13 | 14 | 13 | 14 | 13 | 14 | 13 | 14 |
| 21 | 22 | 21 | 22 | 21 | 22 | 21 | 22 | 21 | 22 | 21 | 22 | 21 | 22 | 21 | 22 |
| 29 | 30 | 29 | 30 | 29 | 30 | 29 | 30 | 29 | 30 | 29 | 30 | 29 | 30 | 29 | 30 |
| 37 | 38 | 37 | 38 | 37 | 38 | 37 | 38 | 37 | 38 | 37 | 38 | 37 | 38 | 37 | 38 |
| 45 | 46 | 45 | 46 | 45 | 46 | 45 | 46 | 45 | 46 | 45 | 46 | 45 | 46 | 45 | 46 |
| 3 | 4 | 3 | 4 | 3 | 4 | 3 | 4 | 3 | 4 | 3 | 4 | 3 | 4 | 3 | 4 |
| 11 | 12 | 11 | 12 | 11 | 12 | 11 | 12 | 11 | 12 | 11 | 12 | 11 | 12 | 11 | 12 |
| 19 | 20 | 19 | 20 | 19 | 20 | 19 | 20 | 19 | 20 | 19 | 20 | 19 | 20 | 19 | 20 |
| 27 | 28 | 27 | 28 | 27 | 28 | 27 | 28 | 27 | 28 | 27 | 28 | 27 | 28 | 27 | 28 |
| 35 | 36 | 35 | 36 | 35 | 36 | 35 | 36 | 35 | 36 | 35 | 36 | 35 | 36 | 35 | 36 |
| 43 | 44 | 43 | 44 | 43 | 44 | 43 | 44 | 43 | 44 | 43 | 44 | 43 | 44 | 43 | 44 |
| 7 | 8 | 7 | 8 | 7 | 8 | 7 | 8 | 7 | 8 | 7 | 8 | 7 | 8 | 7 | 8 |
| 15 | 16 | 15 | 16 | 15 | 16 | 15 | 16 | 15 | 16 | 15 | 16 | 15 | 16 | 15 | 16 |
| 23 | 24 | 23 | 24 | 23 | 24 | 23 | 24 | 23 | 24 | 23 | 24 | 23 | 24 | 23 | 24 |
| 31 | 32 | 31 | 32 | 31 | 32 | 31 | 32 | 31 | 32 | 31 | 32 | 31 | 32 | 31 | 32 |
| 39 | 40 | 39 | 40 | 39 | 40 | 39 | 40 | 39 | 40 | 39 | 40 | 39 | 40 | 39 | 40 |
| 47 | 48 | 47 | 48 | 47 | 48 | 47 | 48 | 47 | 48 | 47 | 48 | 47 | 48 | 47 | 48 |

7.1.3.1.7 Data Scrambling

Data scrambling applies to the Paging and Forward Traffic Channels. Data scrambling is performed on the modulation symbols output from the block interleaver at the 19,200 sps rate.

The data scrambling shall be accomplished by performing the modulo-2 addition of the interleaver output symbol with the binary value of the long code PN chip that is valid at the start of the transmission period for that symbol as shown in Figure 7.1.3.1.7-1. This PN sequence shall be the equivalent of the long code operating at 1.2288 MHz clock rate, where only the first output of every 64 is used for the data scrambling (i.e., at a 19200 sps rate). The long code may be generated as described in 6.1.3.1.8. The long code masks to be used for the Paging and Forward Traffic Channels are specified in 7.1.3.4.6 and 7.1.3.5.7, respectively.

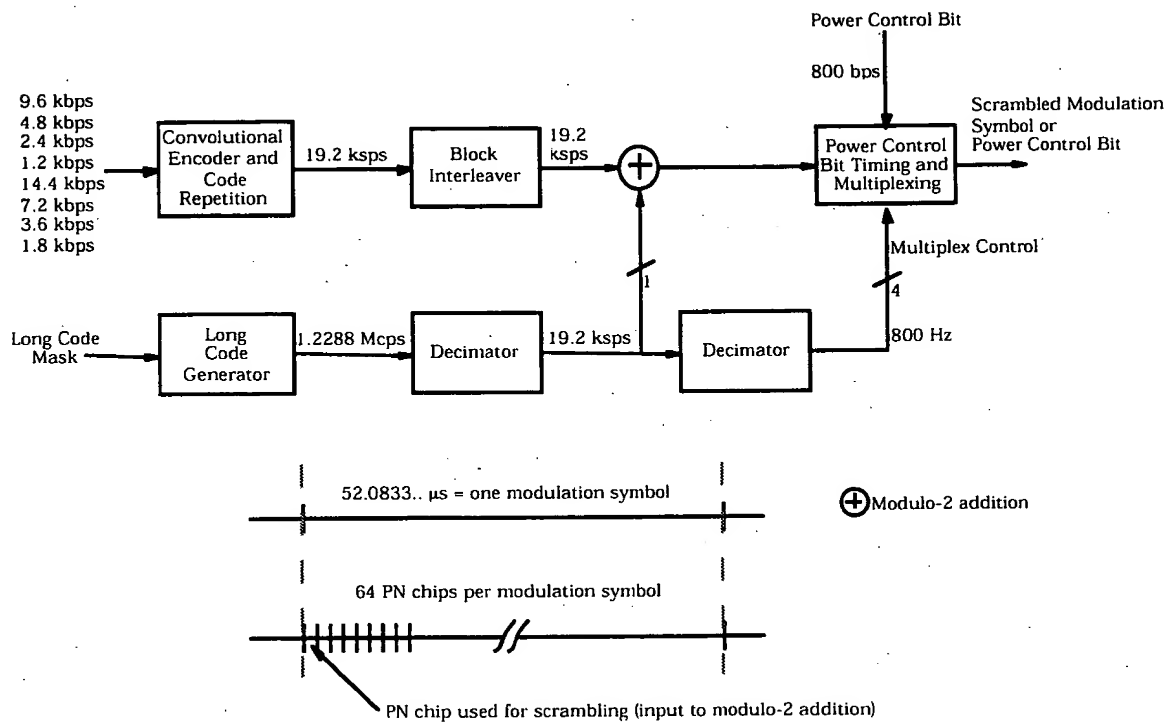


**Figure 7.1.3.1.7-1. Data Scrambler Function and Timing**

7.1.3.1.8 Power Control Subchannel

A power control subchannel is continuously transmitted on the Fundamental Code Channel of the Forward Traffic Channel. A power control subchannel shall not be transmitted on the Forward Supplemental Code Channels. The subchannel shall transmit at a rate of one bit ('0' or '1') every 1.25 ms (i.e., 800 bps). A '0' bit shall indicate to the mobile station that it is to increase the mean output power level and a '1' bit shall indicate to the mobile station that it is to decrease the mean output power level. The amount that

the mobile station increases or decreases its power for every power control bit is specified in 6.1.2.3.2.

The base station Reverse Traffic Channel receiver shall estimate the received signal strength of the particular mobile station it is assigned to over a 1.25 ms period, equivalent to 6 modulation symbols. The base station receiver shall use the estimate to determine the value of the power control bit ('0' or '1'). The base station shall transmit the power control bit on the corresponding Fundamental Code Channel of the Forward Traffic Channel using the puncturing technique described below. The transmission of the power control bit shall occur on the Fundamental Code Channel of the Forward Traffic Channel in the second power control group following the corresponding Reverse Traffic Channel power control group in which the signal strength was estimated.[2]

For Rate Set 1, the length of one power control bit shall correspond exactly to two modulation symbols of the Forward Traffic Channel (i.e., 104.166... µs). Each power control bit shall replace two consecutive Forward Fundamental Code Channel modulation symbols,[3] and shall be transmitted with energy not less than $E_b$, namely the energy per information bit of the Forward Fundamental Code Channel, as shown in Figure 7.1.3.1.8-1.

For Rate Set 2, the length of one power control bit shall correspond exactly to one modulation symbol of the Forward Fundamental Code Channel (i.e., 52.0833... µs). Each power control bit shall replace one Forward Fundamental Code Channel modulation symbol, and shall be transmitted with energy not less than $3E_b/4$, namely 3/4 of the energy per information bit of the Forward Fundamental Code Channel, as shown in Figure 7.1.3.1.8-2.

The power control bits shall be inserted into the Forward Fundamental Code Channel data stream, after the data scrambling.

There are 16 possible starting positions for the power control bit, as shown in Figure 7.1.3.1.8-3. Each position corresponds to one of the first 16 modulation symbols (numbered 0 through 15) of a 1.25 ms period. In each 1.25 ms period, a total of 24 bits from the long code are used for scrambling. These bits are numbered 0 through 23, where bit 0 is the first to be used and bit 23 the last in each 1.25 ms period.

The 4-bit binary number with values 0 through 15 formed by scrambling bits 23, 22, 21, and 20 shall be used to determine the position of the power control bit as shown in Figure 7.1.3.1.8-3. Bit 20 shall be the least significant bit, and bit 23 shall be the most significant bit. In the example of Figure 7.1.3.1.8-3 the values of bits 23, 22, 21, and 20 are '1011' (11 decimal), and the power control bit starting position is eleven. Figure 7.1.3.1.7-1 shows the relationship between the scrambled modulation symbols (at 19200 sps) and the punctured power control subchannel (at 800 bps).

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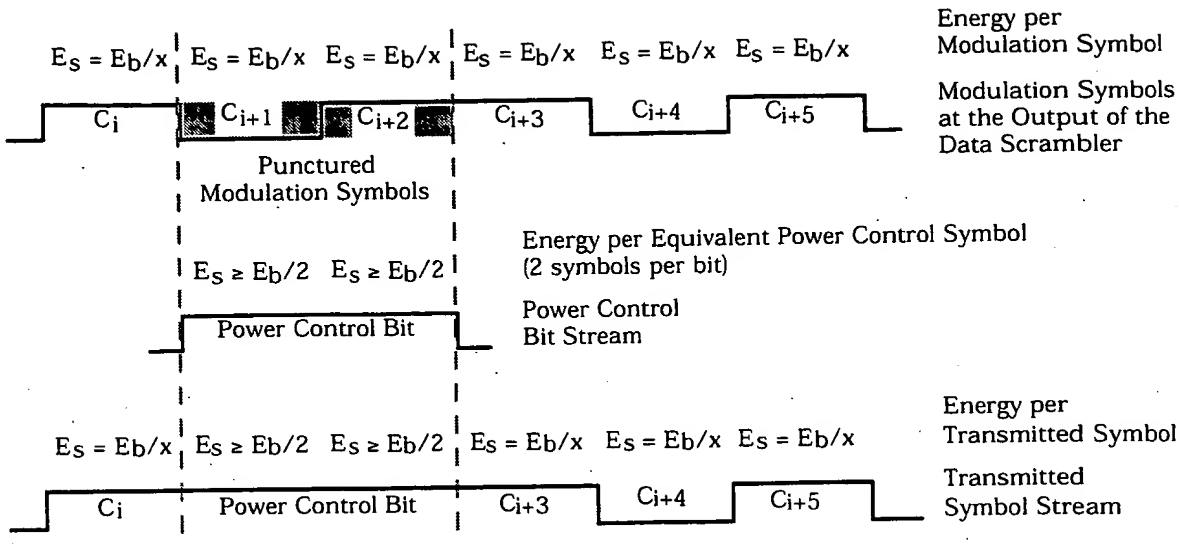
[2] For example, as shown in Figure 7.1.3.1.8-3, the signal is received on the Reverse Traffic Channel in power control group number 5, and the corresponding power control bit is transmitted on the Forward Traffic Channel during power control group number 5 + 2 = 7.

[3] This technique is commonly known as symbol puncturing. In this case, the punctured modulation symbols are replaced by the power control bits.

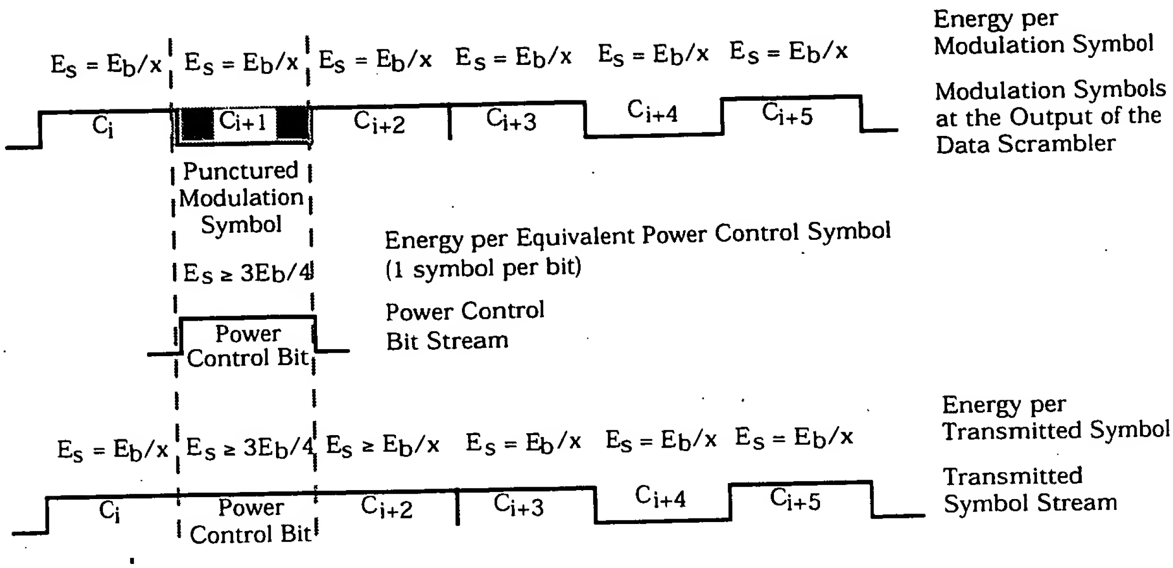



Where x is given by:

| **Transmit Rate** | **Value of x** |
|---|---|
| 9600 bps | 2 |
| 4800 bps | 4 |
| 2400 bps | 8 |
| 1200 bps | 16 |

All unpunctured modulation symbols in a frame are transmitted at the same power level. Modulation symbols in adjacent frames may be sent at different power levels.

**Figure 7.1.3.1.8-1. Power Control Subchannel Structure and Puncturing for Rate Set 1**




Where x is given by:

| Transmit Rate | Value of x |
|---|---|
| 14400 bps | 4/3 |
| 7200 bps | 8/3 |
| 3600 bps | 16/3 |
| 1800 bps | 32/3 |

All unpunctured modulation symbols in a frame are transmitted at the same power level. Modulation symbols in adjacent frames may be sent at different power levels.

**Figure 7.1.3.1.8-2. Power Control Subchannel Structure and Puncturing for Rate Set 2**

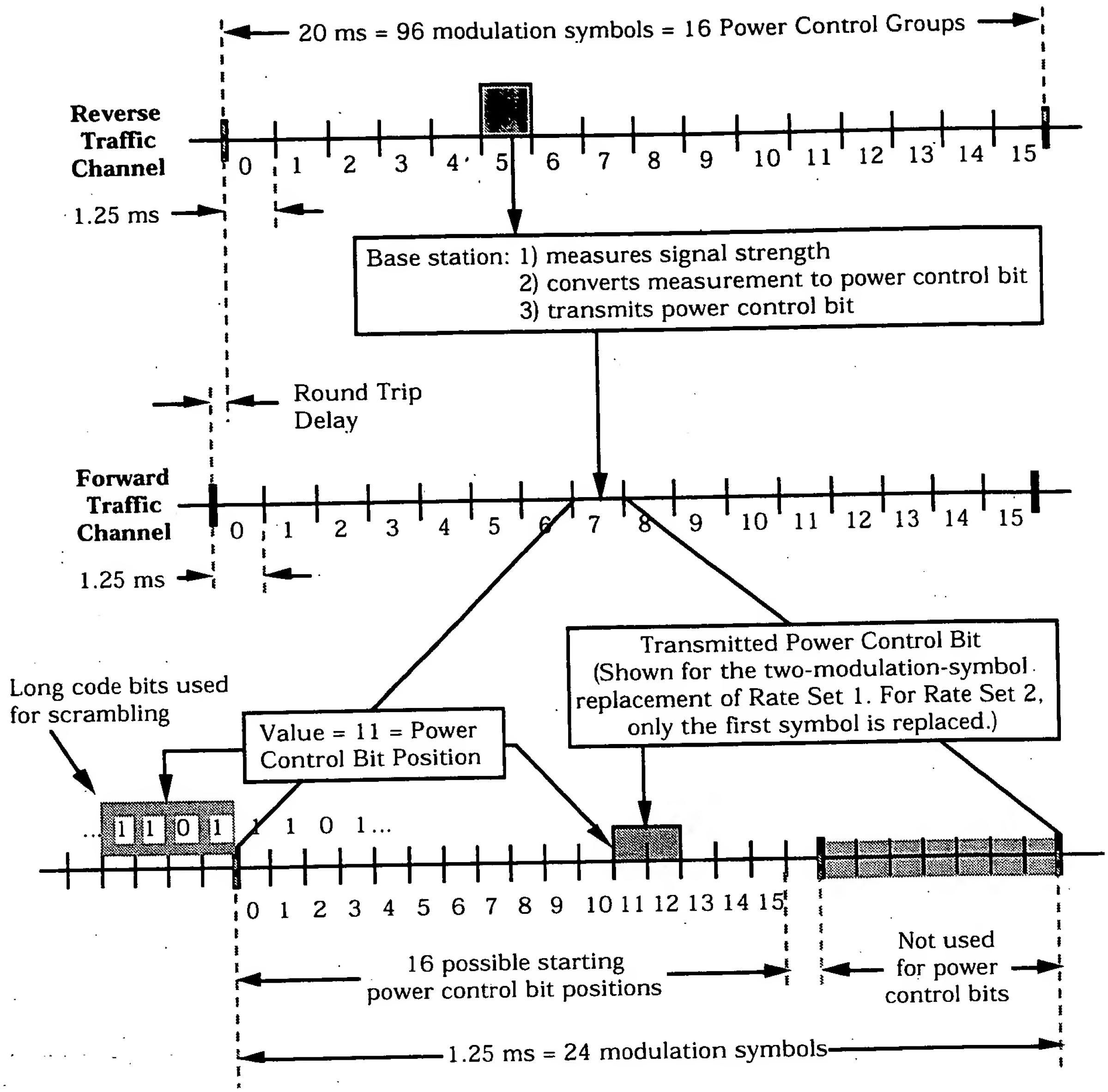



**Figure 7.1.3.1.8-3. Randomization of Power Control Bit Positions**

7.1.3.1.9 Orthogonal Spreading

Each code channel transmitted on the Forward CDMA Channel shall be spread with a Walsh function at a fixed chip rate of 1.2288 Mcps to provide orthogonal channelization among all code channels on a given Forward CDMA Channel. One of sixty-four time-orthogonal Walsh functions, as defined in Table 7.1.3.1.9-1, shall be used. A code channel that is spread using Walsh function n shall be assigned to code channel number n (n = 0 to 63). Walsh function time alignment shall be such that the first Walsh chip, designated by 0 in the column headings of Table 7.1.3.1.9-1, begins at an even second time mark referenced to base station transmission time (see 7.1.5). The Walsh function spreading sequence shall repeat with a period of 52.083... μs (= 64/1.2288 Mcps) which is equal to the duration of one Forward Traffic Channel modulation symbol.

Code channel number zero shall always be assigned to the Pilot Channel. If the Sync Channel is present, it shall be assigned code channel number 32. If Paging Channels are present, they shall be assigned to code channel numbers one up to seven, consecutively. The remaining code channels are available for assignment to the Forward Traffic Channels.

## Table 7.1.3.1.9-1. 64-ary Walsh Functions

Walsh Chip within a Walsh Function

| Walsh Function Index | 0 1 2 3 | 4 5 6 7 | 8 9 10 11 | 12 13 14 15 | 16 17 18 19 | 20 21 22 23 | 24 25 26 27 | 28 29 30 31 | 32 33 34 35 | 36 37 38 39 | 40 41 42 43 | 44 45 46 47 | 48 49 50 51 | 52 53 54 55 | 56 57 58 59 | 60 61 62 63 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 |
| 1 | 0101 | 0101 | 0101 | 0101 | 0101 | 0101 | 0101 | 0101 | 0101 | 0101 | 0101 | 0101 | 0101 | 0101 | 0101 | 0101 |
| 2 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 |
| 3 | 0110 | 0110 | 0110 | 0110 | 0110 | 0110 | 0110 | 0110 | 0110 | 0110 | 0110 | 0110 | 0110 | 0110 | 0110 | 0110 |
| 4 | 0000 | 1111 | 0000 | 1111 | 0000 | 1111 | 0000 | 1111 | 0000 | 1111 | 0000 | 1111 | 0000 | 1111 | 0000 | 1111 |
| 5 | 0101 | 1010 | 0101 | 1010 | 0101 | 1010 | 0101 | 1010 | 0101 | 1010 | 0101 | 1010 | 0101 | 1010 | 0101 | 1010 |
| 6 | 0011 | 1100 | 0011 | 1100 | 0011 | 1100 | 0011 | 1100 | 0011 | 1100 | 0011 | 1100 | 0011 | 1100 | 0011 | 1100 |
| 7 | 0110 | 1001 | 0110 | 1001 | 0110 | 1001 | 0110 | 1001 | 0110 | 1001 | 0110 | 1001 | 0110 | 1001 | 0110 | 1001 |
| 8 | 0000 | 0000 | 1111 | 1111 | 0000 | 0000 | 1111 | 1111 | 0000 | 0000 | 1111 | 1111 | 0000 | 0000 | 1111 | 1111 |
| 9 | 0101 | 0101 | 1010 | 1010 | 0101 | 0101 | 1010 | 1010 | 0101 | 0101 | 1010 | 1010 | 0101 | 0101 | 1010 | 1010 |
| 10 | 0011 | 0011 | 1100 | 1100 | 0011 | 0011 | 1100 | 1100 | 0011 | 0011 | 1100 | 1100 | 0011 | 0011 | 1100 | 1100 |
| 11 | 0110 | 0110 | 1001 | 1001 | 0110 | 0110 | 1001 | 1001 | 0110 | 0110 | 1001 | 1001 | 0110 | 0110 | 1001 | 1001 |
| 12 | 0000 | 1111 | 1111 | 0000 | 0000 | 1111 | 1111 | 0000 | 0000 | 1111 | 1111 | 0000 | 0000 | 1111 | 1111 | 0000 |
| 13 | 0101 | 1010 | 1010 | 0101 | 0101 | 1010 | 1010 | 0101 | 0101 | 1010 | 1010 | 0101 | 0101 | 1010 | 1010 | 0101 |
| 14 | 0011 | 1100 | 1100 | 0011 | 0011 | 1100 | 1100 | 0011 | 0011 | 1100 | 1100 | 0011 | 0011 | 1100 | 1100 | 0011 |
| 15 | 0110 | 1001 | 1001 | 0110 | 0110 | 1001 | 1001 | 0110 | 0110 | 1001 | 1001 | 0110 | 0110 | 1001 | 1001 | 0110 |
| 16 | 0000 | 0000 | 0000 | 0000 | 1111 | 1111 | 1111 | 1111 | 0000 | 0000 | 0000 | 0000 | 1111 | 1111 | 1111 | 1111 |
| 17 | 0101 | 0101 | 0101 | 0101 | 1010 | 1010 | 1010 | 1010 | 0101 | 0101 | 0101 | 0101 | 1010 | 1010 | 1010 | 1010 |
| 18 | 0011 | 0011 | 0011 | 0011 | 1100 | 1100 | 1100 | 1100 | 0011 | 0011 | 0011 | 0011 | 1100 | 1100 | 1100 | 1100 |
| 19 | 0110 | 0110 | 0110 | 0110 | 1001 | 1001 | 1001 | 1001 | 0110 | 0110 | 0110 | 0110 | 1001 | 1001 | 1001 | 1001 |
| 20 | 0000 | 1111 | 0000 | 1111 | 1111 | 0000 | 1111 | 0000 | 0000 | 1111 | 0000 | 1111 | 1111 | 0000 | 1111 | 0000 |
| 21 | 0101 | 1010 | 0101 | 1010 | 1010 | 0101 | 1010 | 0101 | 0101 | 1010 | 0101 | 1010 | 1010 | 0101 | 1010 | 0101 |
| 22 | 0011 | 1100 | 0011 | 1100 | 1100 | 0011 | 1100 | 0011 | 0011 | 1100 | 0011 | 1100 | 1100 | 0011 | 1100 | 0011 |
| 23 | 0110 | 1001 | 0110 | 1001 | 1001 | 0110 | 1001 | 0110 | 0110 | 1001 | 0110 | 1001 | 1001 | 0110 | 1001 | 0110 |
| 24 | 0000 | 0000 | 1111 | 1111 | 1111 | 1111 | 0000 | 0000 | 0000 | 0000 | 1111 | 1111 | 1111 | 1111 | 0000 | 0000 |
| 25 | 0101 | 0101 | 1010 | 1010 | 1010 | 1010 | 0101 | 0101 | 0101 | 0101 | 1010 | 1010 | 1010 | 1010 | 0101 | 0101 |
| 26 | 0011 | 0011 | 1100 | 1100 | 1100 | 1100 | 0011 | 0011 | 0011 | 0011 | 1100 | 1100 | 1100 | 1100 | 0011 | 0011 |
| 27 | 0110 | 0110 | 1001 | 1001 | 1001 | 1001 | 0110 | 0110 | 0110 | 0110 | 1001 | 1001 | 1001 | 1001 | 0110 | 0110 |
| 28 | 0000 | 1111 | 1111 | 0000 | 1111 | 0000 | 0000 | 1111 | 0000 | 1111 | 1111 | 0000 | 1111 | 0000 | 0000 | 1111 |
| 29 | 0101 | 1010 | 1010 | 0101 | 1010 | 0101 | 0101 | 1010 | 0101 | 1010 | 1010 | 0101 | 1010 | 0101 | 0101 | 1010 |
| 30 | 0011 | 1100 | 1100 | 0011 | 1100 | 0011 | 0011 | 1100 | 0011 | 1100 | 1100 | 0011 | 1100 | 0011 | 0011 | 1100 |
| 31 | 0110 | 1001 | 1001 | 0110 | 1001 | 0110 | 0110 | 1001 | 0110 | 1001 | 1001 | 0110 | 1001 | 0110 | 0110 | 1001 |
| 32 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 |
| 33 | 0101 | 0101 | 0101 | 0101 | 0101 | 0101 | 0101 | 0101 | 1010 | 1010 | 1010 | 1010 | 1010 | 1010 | 1010 | 1010 |
| 34 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 1100 | 1100 | 1100 | 1100 | 1100 | 1100 | 1100 | 1100 |
| 35 | 0110 | 0110 | 0110 | 0110 | 0110 | 0110 | 0110 | 0110 | 1001 | 1001 | 1001 | 1001 | 1001 | 1001 | 1001 | 1001 |
| 36 | 0000 | 1111 | 0000 | 1111 | 0000 | 1111 | 0000 | 1111 | 1111 | 0000 | 1111 | 0000 | 1111 | 0000 | 1111 | 0000 |
| 37 | 0101 | 1010 | 0101 | 1010 | 0101 | 1010 | 0101 | 1010 | 1010 | 0101 | 1010 | 0101 | 1010 | 0101 | 1010 | 0101 |
| 38 | 0011 | 1100 | 0011 | 1100 | 0011 | 1100 | 0011 | 1100 | 1100 | 0011 | 1100 | 0011 | 1100 | 0011 | 1100 | 0011 |
| 39 | 0110 | 1001 | 0110 | 1001 | 0110 | 1001 | 0110 | 1001 | 1001 | 0110 | 1001 | 0110 | 1001 | 0110 | 1001 | 0110 |
| 40 | 0000 | 0000 | 1111 | 1111 | 0000 | 0000 | 1111 | 1111 | 1111 | 1111 | 0000 | 0000 | 1111 | 1111 | 0000 | 0000 |
| 41 | 0101 | 0101 | 1010 | 1010 | 0101 | 0101 | 1010 | 1010 | 1010 | 1010 | 0101 | 0101 | 1010 | 1010 | 0101 | 0101 |
| 42 | 0011 | 0011 | 1100 | 1100 | 0011 | 0011 | 1100 | 1100 | 1100 | 1100 | 0011 | 0011 | 1100 | 1100 | 0011 | 0011 |
| 43 | 0110 | 0110 | 1001 | 1001 | 0110 | 0110 | 1001 | 1001 | 1001 | 1001 | 0110 | 0110 | 1001 | 1001 | 0110 | 0110 |
| 44 | 0000 | 1111 | 1111 | 0000 | 0000 | 1111 | 1111 | 0000 | 1111 | 0000 | 0000 | 1111 | 1111 | 0000 | 0000 | 1111 |
| 45 | 0101 | 1010 | 1010 | 0101 | 0101 | 1010 | 1010 | 0101 | 1010 | 0101 | 0101 | 1010 | 1010 | 0101 | 0101 | 1010 |
| 46 | 0011 | 1100 | 1100 | 0011 | 0011 | 1100 | 1100 | 0011 | 1100 | 0011 | 0011 | 1100 | 1100 | 0011 | 0011 | 1100 |
| 47 | 0110 | 1001 | 1001 | 0110 | 0110 | 1001 | 1001 | 0110 | 1001 | 0110 | 0110 | 1001 | 1001 | 0110 | 0110 | 1001 |
| 48 | 0000 | 0000 | 0000 | 0000 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 1111 | 0000 | 0000 | 0000 | 0000 |
| 49 | 0101 | 0101 | 0101 | 0101 | 1010 | 1010 | 1010 | 1010 | 1010 | 1010 | 1010 | 1010 | 0101 | 0101 | 0101 | 0101 |
| 50 | 0011 | 0011 | 0011 | 0011 | 1100 | 1100 | 1100 | 1100 | 1100 | 1100 | 1100 | 1100 | 0011 | 0011 | 0011 | 0011 |
| 51 | 0110 | 0110 | 0110 | 0110 | 1001 | 1001 | 1001 | 1001 | 1001 | 1001 | 1001 | 1001 | 0110 | 0110 | 0110 | 0110 |
| 52 | 0000 | 1111 | 0000 | 1111 | 1111 | 0000 | 1111 | 0000 | 1111 | 0000 | 1111 | 0000 | 0000 | 1111 | 0000 | 1111 |
| 53 | 0101 | 1010 | 0101 | 1010 | 1010 | 0101 | 1010 | 0101 | 1010 | 0101 | 1010 | 0101 | 0101 | 1010 | 0101 | 1010 |
| 54 | 0011 | 1100 | 0011 | 1100 | 1100 | 0011 | 1100 | 0011 | 1100 | 0011 | 1100 | 0011 | 0011 | 1100 | 0011 | 1100 |
| 55 | 0110 | 1001 | 0110 | 1001 | 1001 | 0110 | 1001 | 0110 | 1001 | 0110 | 1001 | 0110 | 0110 | 1001 | 0110 | 1001 |
| 56 | 0000 | 0000 | 1111 | 1111 | 1111 | 1111 | 0000 | 0000 | 1111 | 1111 | 0000 | 0000 | 0000 | 0000 | 1111 | 1111 |
| 57 | 0101 | 0101 | 1010 | 1010 | 1010 | 1010 | 0101 | 0101 | 1010 | 1010 | 0101 | 0101 | 0101 | 0101 | 1010 | 1010 |
| 58 | 0011 | 0011 | 1100 | 1100 | 1100 | 1100 | 0011 | 0011 | 1100 | 1100 | 0011 | 0011 | 0011 | 0011 | 1100 | 1100 |
| 59 | 0110 | 0110 | 1001 | 1001 | 1001 | 1001 | 0110 | 0110 | 1001 | 1001 | 0110 | 0110 | 0110 | 0110 | 1001 | 1001 |
| 60 | 0000 | 1111 | 1111 | 0000 | 1111 | 0000 | 0000 | 1111 | 1111 | 0000 | 0000 | 1111 | 0000 | 1111 | 1111 | 0000 |
| 61 | 0101 | 1010 | 1010 | 0101 | 1010 | 0101 | 0101 | 1010 | 1010 | 0101 | 0101 | 1010 | 0101 | 1010 | 1010 | 0101 |
| 62 | 0011 | 1100 | 1100 | 0011 | 1100 | 0011 | 0011 | 1100 | 1100 | 0011 | 0011 | 1100 | 0011 | 1100 | 1100 | 0011 |
| 63 | 0110 | 1001 | 1001 | 0110 | 1001 | 0110 | 0110 | 1001 | 1001 | 0110 | 0110 | 1001 | 0110 | 1001 | 1001 | 0110 |

7.1.3.1.10 Quadrature Spreading

Following the orthogonal spreading, each code channel is spread in quadrature as shown in Figure 7.1.3.1-1. The spreading sequence shall be a quadrature sequence of length $2^{15}$ (i.e., 32768 PN chips in length). This sequence is called the pilot PN sequence and shall be based on the following characteristic polynomials:

$$P_I(x) = x^{15} + x^{13} + x^9 + x^8 + x^7 + x^5 + 1$$

(for the in-phase (I) sequence)

and

$$P_Q(x) = x^{15} + x^{12} + x^{11} + x^{10} + x^6 + x^5 + x^4 + x^3 + 1$$

(for the quadrature-phase (Q) sequence).

The maximum length linear feedback shift register sequences i(n) and q(n) based on the above polynomials are of length $2^{15} - 1$ and can be generated by the following linear recursions:

$$i(n) = i(n-15) \oplus i(n-10) \oplus i(n-8) \oplus i(n-7) \oplus i(n-6) \oplus i(n-2)$$

(based on $P_I(x)$ as the characteristic polynomial)

and

$$q(n) = q(n-15) \oplus q(n-12) \oplus q(n-11) \oplus q(n-10) \oplus q(n-9) \oplus q(n-5) \oplus q(n-4) \oplus q(n-3)$$

(based on $P_Q(x)$ as the characteristic polynomial),

where i(n) and q(n) are binary-valued ('0' and '1') and the additions are modulo-2. In order to obtain the I and Q pilot PN sequences (of period $2^{15}$), a '0' is inserted in i(n) and q(n) after 14 consecutive '0' outputs (this occurs only once in each period; therefore, the pilot PN sequences have one run of 15 consecutive '0' outputs instead of 14.

The chip rate for the pilot PN sequence shall be 1.2288 Mcps. The pilot PN sequence period is 32768/1228800 = 26.666... ms, and exactly 75 pilot PN sequence repetitions occur every 2 seconds. The pilot PN sequence offset shall be as specified in 7.1.3.2.1.

After baseband filtering, the binary I and Q at the output of the quadrature spreading (shown in Figure 7.1.3.1-1) shall be mapped into phase according to Table 7.1.3.1.10-1.

**Table 7.1.3.1.10-1. Forward CDMA Channel I and Q Mapping**

| I | Q | Phase |
|---|---|---|
| 0 | 0 | $\pi/4$ |
| 1 | 0 | $3\pi/4$ |
| 1 | 1 | $-3\pi/4$ |
| 0 | 1 | $-\pi/4$ |

The resulting signal constellation and phase transitions are shown in Figure 7.1.3.1.10-1.

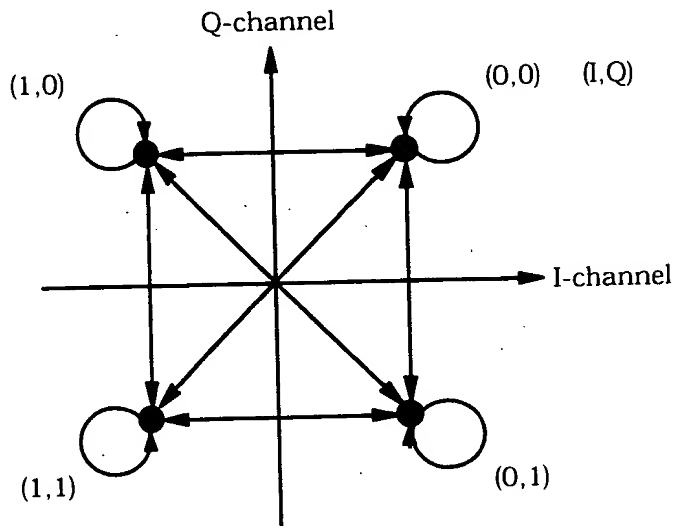



**Figure 7.1.3.1.10-1. Forward CDMA Channel Signal Constellation and Phase Transition**

7.1.3.1.11 Filtering

7.1.3.1.11.1 Baseband Filtering

Following the spreading operation, the I and Q impulses are applied to the inputs of the I and Q baseband filters as shown in Figure 7.1.3.1-1. The baseband filters shall have a frequency response S(f) that satisfies the limits given in Figure 7.1.3.1.11.1-1. Specifically, the normalized frequency response of the filter shall be contained within $\pm\delta_1$ in the passband $0 \le f \le f_p$, and shall be less than or equal to $-\delta_2$ in the stopband $f \ge f_s$. The numerical values for the parameters are $\delta_1$ = 1.5 dB, $\delta_2$ = 40 dB, $f_p$ = 590 kHz, and $f_s$ = 740 kHz.

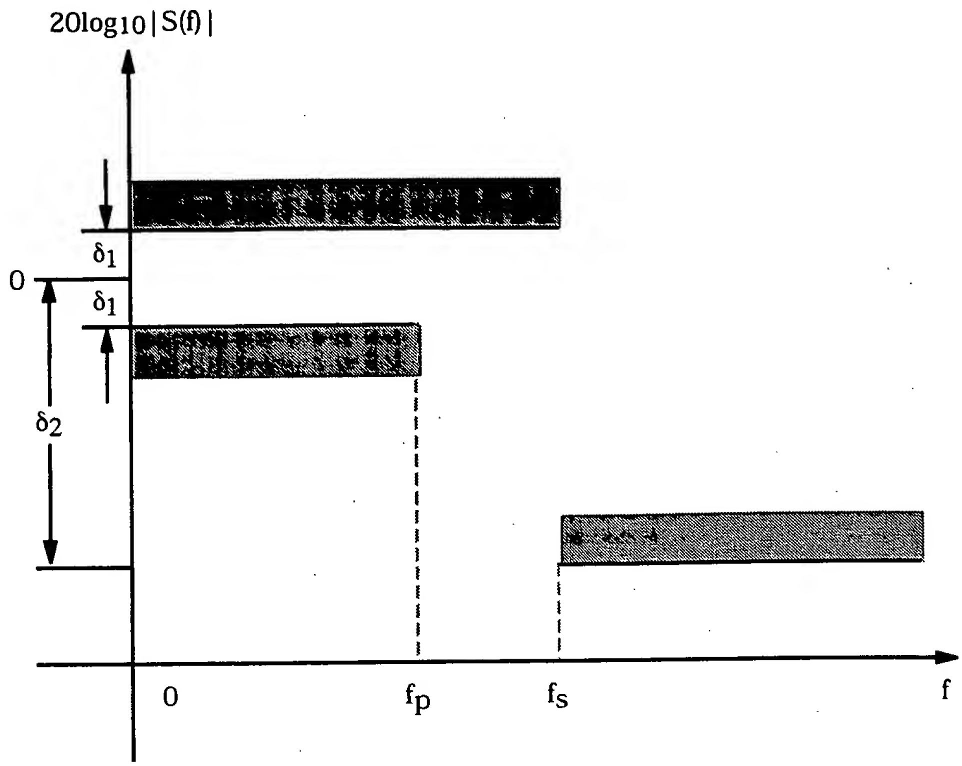



**Figure 7.1.3.1.11.1-1. Baseband Filters Frequency Response Limits**

If s(t) is the impulse response of the baseband filter, then s(t) should satisfy the following equation:

$$\text{Mean Squared Error} = \sum_{k=0}^{\infty} [\alpha s(kT_S - \tau) - h(k)]^2 \leq 0.03,$$

where the constants $\alpha$ and $\tau$ are used to minimize the mean squared error. The constant $T_S$ is equal to 203.451... ns, which equals one quarter of a PN chip. The values of the coefficients h(k), for k < 48, are given in Table 7.1.3.1.11.1-1; h(k) = 0 for k ≥ 48. Note that h(k) equals h(47 - k).

**Table 7.1.3.1.11.1-1. Coefficients h(k)**

| k | h(k) |
|---|---|
| 0, 47 | -0.025288315 |
| 1, 46 | -0.034167931 |
| 2, 45 | -0.035752323 |
| 3, 44 | -0.016733702 |
| 4, 43 | 0.021602514 |
| 5, 42 | 0.064938487 |
| 6, 41 | 0.091002137 |
| 7, 40 | 0.081894974 |
| 8, 39 | 0.037071157 |
| 9, 38 | -0.021998074 |
| 10, 37 | -0.060716277 |
| 11, 36 | -0.051178658 |
| 12, 35 | 0.007874526 |
| 13, 34 | 0.084368728 |
| 14, 33 | 0.126869306 |
| 15, 32 | 0.094528345 |
| 16, 31 | -0.012839661 |
| 17, 30 | -0.143477028 |
| 18, 29 | -0.211829088 |
| 19, 28 | -0.140513128 |
| 20, 27 | 0.094601918 |
| 21, 26 | 0.441387140 |
| 22, 25 | 0.785875640 |
| 23, 24 | 1.0 |

7.1.3.1.11.2 Phase Characteristics

The base station shall provide phase equalization for the transmit signal path.[4] The equalizing filter shall be designed to provide the equivalent baseband transfer function

$$H(\omega) = K \frac{\omega^2 + j\alpha\omega\omega_0 - \omega_0^2}{\omega^2 - j\alpha\omega\omega_0 - \omega_0^2},$$

where K is an arbitrary gain, j equals $\sqrt{-1}$, $\alpha$ equals 1.36, $\omega_0$ equals $2\pi \times 3.15 \times 10^5$, and $\omega$ is the radian frequency. The equalizing filter implementation shall be equivalent to applying baseband filters with this transfer function individually to the baseband I and Q waveforms.

A phase error test filter is defined to be the overall base station transmitter filter (including the equalizing filter) cascaded with a filter having a transfer function that is the inverse of the equalizing filter specified above. The response of the test filter should have a mean squared phase error from the best fit linear phase response that is no greater than 0.01 squared radians when integrated over the frequency range 1 kHz $\le |f - f_c| \le$ 630 kHz. For purposes of this requirement, "overall" shall mean from the I and Q baseband filter inputs (see 7.1.3.1.11.1) to the RF output of the transmitter.

7.1.3.2 Pilot Channel

The Pilot Channel is an unmodulated spread spectrum signal that is used for synchronization by a mobile station operating within the coverage area of the base station.

A Pilot Channel is transmitted at all times by the base station on each active Forward CDMA Channel, unless the base station is classified as a hopping pilot beacon. Hopping pilot beacons change frequency periodically to simulate multiple pilot beacons transmitting pilot information. This results in discontinuous transmissions on a given CDMA channel. If the Pilot Channel is transmitted by a hopping pilot beacon, then the timing requirements in 7.1.3.2.5 shall apply.

7.1.3.2.1 Pilot PN Sequence Offset

Each base station shall use a time offset of the pilot PN sequence to identify a Forward CDMA Channel. Time offsets may be reused within a CDMA cellular system.

Distinct Pilot Channels shall be identified by an offset index (0 through 511 inclusive). This offset index specifies the offset value from the zero offset pilot PN sequence. The zero offset pilot PN sequence shall be such that the start of the sequence shall be output at the beginning of every even second in time, referenced to the base station transmission time (see 7.1.5). The start of the zero offset pilot PN sequence for either the I or Q sequence shall be defined as the state of the sequence for which the previous 15 outputs were '0' (see Figure 1.2-1).

[4] This equalization simplifies the design of the mobile station receive filters.

Five-hundred-twelve unique values are possible for the pilot PN sequence offset. The offset (in chips) for a given pilot PN sequence from the zero offset pilot PN sequence is equal to the index value multiplied by 64; for example, if the pilot PN sequence offset index is 15, the pilot PN sequence offset will be 15 × 64 = 960 PN chips. In this case, the pilot PN sequence will start 781.25 μs after the start of every even second of time, referenced to the base station transmission time. The pilot PN sequence offset is illustrated in Figure 7.1.3.2.1-1. The same pilot PN sequence offset shall be used on all CDMA frequency assignments for a given base station.

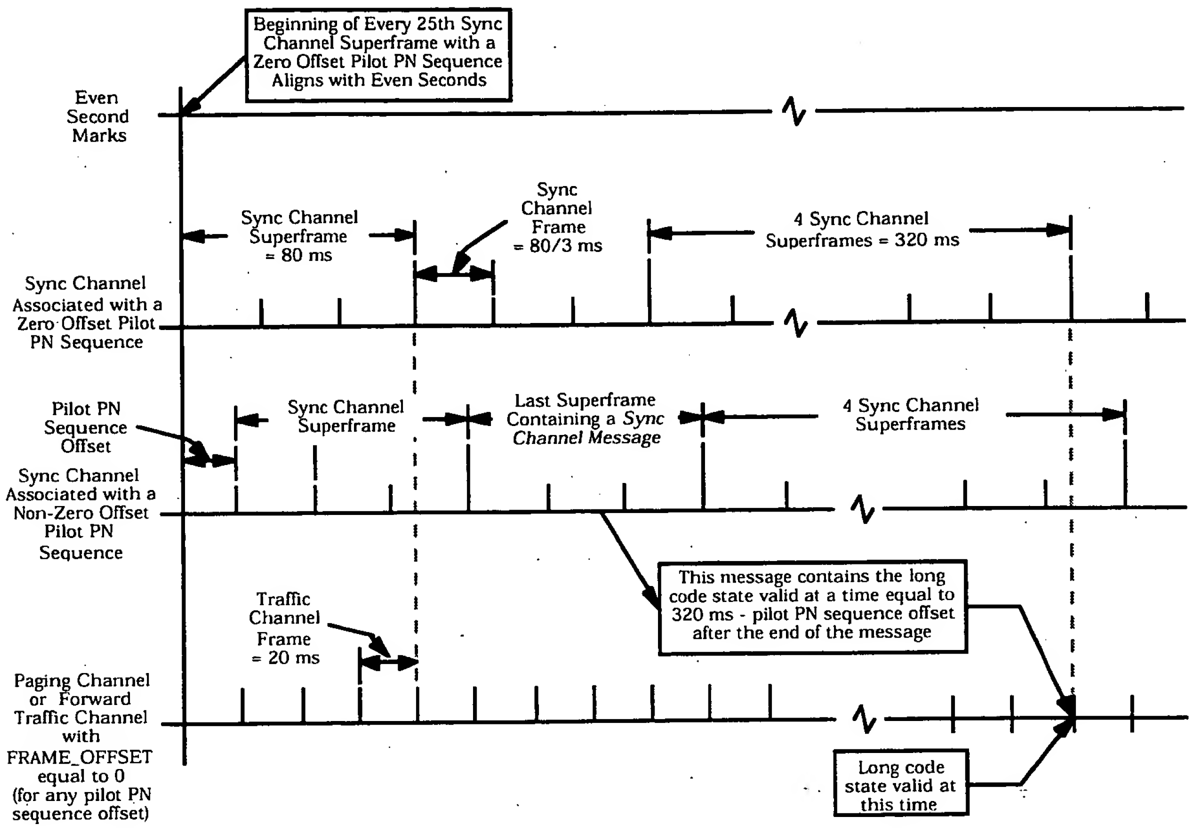



**Figure 7.1.3.2.1-1. Forward CDMA Channel Pilot PN Sequence Offset**

### 7.1.3.2.2 Pilot Channel Orthogonal Spreading

The pilot channel shall be spread with Walsh function zero as specified in 7.1.3.1.9.

### 7.1.3.2.3 Pilot Channel Quadrature Spreading

The Pilot Channel shall be PN spread, using the PN sequence specified in 7.1.3.1.10.

### 7.1.3.2.4 Pilot Channel Filtering

Filtering for the Pilot Channel shall be as specified in 7.1.3.1.11.

7.1.3.2.5 Hopping Pilot Beacon Timing

Each hopping pilot beacon shall use three parameters to control the timing of the transmit window. These are NGHBR_TX_OFFSET, NGHBR_TX_DURATION, and NGHBR_TX_PERIOD. These parameters are shown in Figure 7.1.3.2.5-1. The value of NGHBR_TX_DURATION is the time that the pilot beacon is transmitting. The values of NGHBR_TX_OFFSET and NGHBR_TX_PERIOD are used to determine the starting position of the transmission relative to the first transmit window.

The first transmit window shall start when

$$(\lfloor t/4 \rfloor - \text{NGHBR\_TX\_OFFSET}) \bmod (16384) = 0,$$

where t is the System Time in frames and NGHBR_TX_OFFSET is the offset time in multiples of 80 ms.

Subsequent transmit windows shall start at multiples of NGHBR_TX_PERIOD after the first transmit window starts.

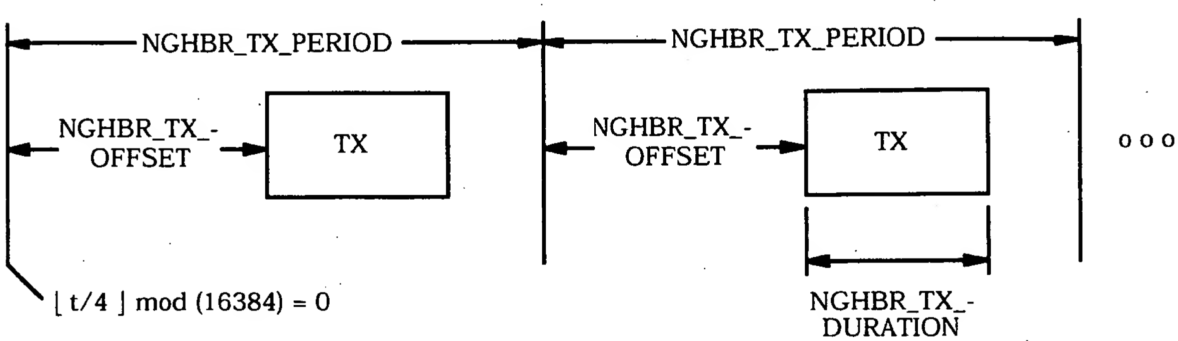



**Figure 7.1.3.2.5-1. Hopping Pilot Beacon Timing**

7.1.3.3 Sync Channel

The Sync Channel is an encoded, interleaved, spread, and modulated spread spectrum signal that is used by mobile stations operating within the coverage area of the base station to acquire initial time synchronization.

7.1.3.3.1 Sync Channel Time Alignment and Modulation Rates

The bit rate for the Sync Channel is 1200 bps. A Sync Channel frame is 26.666... ms in duration. For a given base station, the I and Q channel pilot PN sequences for the Sync Channel use the same pilot PN sequence offset as for the Pilot Channel.

Once the mobile station achieves pilot PN sequence synchronization by acquiring the Pilot Channel, the synchronization for the Sync Channel is immediately known. This is because the Sync Channel (and all other channels) are spread with the same pilot PN sequence, and because the frame and interleaver timing on the Sync Channel are aligned with the pilot PN sequence.

The start of the interleaver block and the frame of the Sync Channel shall align with the start of the pilot PN sequence being used to spread the Forward CDMA Channel (see Figure 7.1.3.2.1-1). See Table 7.1.3.1.1-1 for a summary of Sync Channel modulation parameters.

#### 7.1.3.3.2 Sync Channel Structure

A Sync Channel superframe is formed by three Sync Channel frames (i.e., 80 ms) as shown in Figure 7.1.3.2.1-1. Messages transmitted on the Sync Channel begin only at the start of a Sync Channel superframe (see Figure 7.7.1.1-1).

When using the zero-offset Pilot PN sequence, Sync Channel superframes begin at the even second time mark referenced to base station transmission time (see 7.1.5) or at the end of any third Sync Channel frame after that. When using a Pilot PN sequence other than the zero-offset sequence, the Sync Channel superframe shall begin at the even second time mark plus the pilot PN offset value in time or at the end of any third Sync Channel frame after that.

#### 7.1.3.3.3 Sync Channel Convolutional Encoding

The Sync Channel data shall be convolutionally encoded prior to transmission, as specified in 7.1.3.1.3. The state of the Sync Channel convolutional encoder shall not be reset between Sync Channel frames.

#### 7.1.3.3.4 Sync Channel Code Symbol Repetition

The Sync Channel code symbols shall be repeated as specified in 7.1.3.1.4.

#### 7.1.3.3.5 Sync Channel Interleaving

The modulation symbols on the Sync Channel shall be interleaved, as specified in 7.1.3.1.6, with the following exception: Since the Sync Channel is not convolutionally encoded by blocks (the state of the encoder is not reset between Sync Channel frames), the last eight bits of a Sync Channel frame influence symbols in the successive interleaver block.

The interleaver block shall align with the Sync Channel frame, such that the first bit of the frame influences the first 36 (numbered 1 1 2 2 . . . 18 18) modulation symbols input into the interleaver block.

#### 7.1.3.3.6 Sync Channel Data Scrambling

The Sync Channel data shall not be scrambled.

#### 7.1.3.3.7 Sync Channel Power Control Subchannel

The base station shall not insert a power control subchannel on the Sync Channel.

#### 7.1.3.3.8 Sync Channel Orthogonal Spreading

The Sync Channel shall be spread with Walsh function 32 as specified in 7.1.3.1.9.

#### 7.1.3.3.9 Sync Channel Quadrature Spreading

The Sync Channel shall be PN spread, using the PN sequence specified in 7.1.3.1.10.

#### 7.1.3.3.10 Sync Channel Filtering

Filtering for the Sync Channel shall be as specified in 7.1.3.1.11.

### 7.1.3.4 Paging Channel

The Paging Channel is an encoded, interleaved, spread, and modulated spread spectrum signal that is used by mobile stations operating within the coverage area of the base station. The base station uses the Paging Channel to transmit system overhead information and mobile station specific messages.

The Primary Paging Channel shall be Paging Channel number 1.

#### 7.1.3.4.1 Paging Channel Time Alignment and Modulation Rates

The Paging Channel shall transmit information at a fixed data rate of 9600 or 4800 bps. All Paging Channels in a given system (i.e., with the same SID) should transmit information at the same data rate. A Paging Channel frame is 20 ms in duration.

For a given base station, the I and Q channel pilot PN sequences for the Paging Channel use the same pilot PN sequence offset as the Pilot Channel.

The start of the interleaver block and the frame of the Paging Channel shall align with the start of the zero-offset pilot PN sequence at every even-second time mark (see Figure 7.1.3.2.1-1). The first Paging Channel frame shall begin at the start of base station transmission time (see 7.1.5). See Table 7.1.3.1.1-2 for a summary of Paging Channel modulation parameters.

#### 7.1.3.4.2 Paging Channel Structure

The Paging Channel shall be divided into Paging Channel slots that are each 80 ms in duration, as shown in the examples in Figures 6.6.2.1.1.1-1 and 7.7.2.1.1-1.

#### 7.1.3.4.3 Paging Channel Convolutional Encoding

The Paging Channel data shall be convolutionally encoded as specified in 7.1.3.1.3. The state of the Paging Channel convolutional encoder shall not be reset between Paging Channel frames.

#### 7.1.3.4.4 Paging Channel Code Symbol Repetition

The Paging Channel code symbols shall be repeated as specified in 7.1.3.1.4.

#### 7.1.3.4.5 Paging Channel Interleaving

The modulation symbols on the Paging Channel shall be interleaved, as specified in 7.1.3.1.6. The interleaver block shall align with the Paging Channel frame. The alignment shall be such that the first bit of the frame influences the first 18 (for 9600 bps) or 36 (for 4800 bps) modulation symbols input into the interleaver.

Since the Paging Channel is not convolutionally encoded by blocks, the last 8 bits of a Paging Channel frame influence symbols in the successive interleaver block.

### 7.1.3.4.6 Paging Channel Data Scrambling

The Paging Channel data shall be scrambled as specified in 7.1.3.1.7 utilizing the Paging Channel long code mask as shown in Figure 7.1.3.4.6-1.

| 41 … 29 | 28 … 24 | 23 … 21 | 20 … 9 | 8 … 0 |
|---|---|---|---|---|
| 1100011001101 | 00000 | PCN | 000000000000 | PILOT_PN |

PCN - Paging Channel Number
PILOT_PN - Pilot PN sequence offset index for the Forward CDMA Channel

**Figure 7.1.3.4.6-1. Paging Channel Long Code Mask**

### 7.1.3.4.7 Paging Channel Power Control Subchannel

The base station shall not insert a power control subchannel on the Paging Channel.

### 7.1.3.4.8 Paging Channel Orthogonal Spreading

The Paging Channel shall be spread by a Walsh function, with the index equal to the Paging Channel number, as specified in 7.1.3.1.9.

### 7.1.3.4.9 Paging Channel Quadrature Spreading

The Paging Channel shall be PN spread, using the PN sequence specified in 7.1.3.1.10.

### 7.1.3.4.10 Paging Channel Filtering

Filtering for the Paging Channel shall be as specified in 7.1.3.1.11.

### 7.1.3.5 Forward Traffic Channel

The Forward Traffic Channel is used for the transmission of user and signaling information to a specific mobile station during a call. Each Forward Traffic Channel contains one Forward Fundamental Code Channel and may contain one to seven Forward Supplemental Code Channels. The maximum number of Forward Fundamental and Supplemental Code Channels that can be simultaneously supported by all Forward Traffic Channels in a given Forward CDMA Channel is equal to 63 minus the number of Paging Channels and Sync Channels operating on the same Forward CDMA Channel.

7.1.3.5.1 Forward Traffic Channel Time Alignment and Modulation Rates

The base station shall transmit information on the Fundamental Code Channel of the Forward Traffic Channel at variable data rates of 9600, 4800, 2400, and 1200 bps for Rate Set 1. When transmitting on Forward Supplemental Code Channels, the base station shall transmit information at 9600 bps for Rate Set 1.

The base station may transmit information on the Fundamental Code Channel of the Forward Traffic Channel at 14400, 7200, 3600, and 1800 bps for Rate Set 2. When transmitting on Forward Supplemental Code Channels, the base station shall transmit information at 14400 bps for Rate Set 2.

A Forward Traffic Channel frame is 20 ms in duration. The data rate within a rate set shall be selected on a frame-by-frame (i.e., 20 ms) basis. Although the data rate may vary on a frame-by-frame basis, the modulation symbol rate is kept constant by code repetition at 19,200 symbols per second (sps).

For a given base station, the I and Q channel pilot PN sequences for the Forward Traffic Channel use the same pilot PN sequence offset as for the Pilot Channel.

The modulation symbols that are transmitted at lower data rates shall be transmitted using lower energy. Specifically, the energy per modulation symbol ($E_s$) for the supported data rates should be as in Table 7.1.3.5.1-1, where $E_b$ is the energy per information bit. Note that all symbols in an interleaver block are from the same frame; thus they are all transmitted at the same energy. The transmit power of the power control bits shall be as specified in 7.1.3.1.8.

**Table 7.1.3.5.1-1. Transmitted Symbol Energy Versus Data Rate**

| Data Rate (bps) | Energy per Modulation Symbol |
|---|---|
| 9600 | $E_s = E_b/2$ |
| 4800 | $E_s = E_b/4$ |
| 2400 | $E_s = E_b/8$ |
| 1200 | $E_s = E_b/16$ |
| 14400 | $E_s = 3E_b/4$ |
| 7200 | $E_s = 3E_b/8$ |
| 3600 | $E_s = 3E_b/16$ |
| 1800 | $E_s = 3E_b/32$ |

A base station may implement Forward Traffic Channel frames which are offset. The amount of time offset is specified by the FRAME_OFFSET parameter (see the *Channel Assignment Message* in 7.7.2.3.2.8, the *Extended Channel Assignment Message* in 7.7.2.3.2.21, the *General Handoff Direction Message* in 7.7.3.3.2.31, and the *Extended*

*Handoff Direction Message* in 7.7.3.3.2.17).[5] A zero-offset Forward Traffic Channel frame shall be such that every 100th frame shall align with the even-second time mark referenced to the base station transmission time (see 7.1.5). An offset frame shall begin 1.25 × FRAME_OFFSET ms later than the zero-offset Traffic Channel frame. The Forward Traffic Channel block interleaver shall always be aligned with the Forward Traffic Channel frame. Frames on all code channels within a Forward Traffic Channel shall have the same offset.

#### 7.1.3.5.2 Forward Traffic Channel Frame Structure

Table 7.1.3.5.2-1 summarizes the Forward Traffic Channel bit allocations.

Forward Traffic Channel frames sent with Rate Set 1 at the 9600 bps transmission rate shall consist of 192 bits. These 192 bits shall be composed of 172 information bits followed by 12 frame quality indicator (CRC) bits and eight Encoder Tail Bits, as shown in Figure 7.1.3.5.2-1.

Forward Traffic Channel frames sent with Rate Set 1 at the 4800 bps transmission rate shall consist of 96 bits. These 96 bits shall be composed of 80 information bits followed by eight frame quality indicator (CRC) bits and eight Encoder Tail Bits, as shown in Figure 7.1.3.5.2-1.

Forward Traffic Channel frames sent with Rate Set 1 at the 2400 bps transmission rate shall consist of 48 bits. These 48 bits shall be composed of 40 information bits followed by eight Encoder Tail Bits, as shown in Figure 7.1.3.5.2-1.

Forward Traffic Channel frames sent with Rate Set 1 at the 1200 bps transmission rate shall consist of 24 bits. These 24 bits shall be composed of 16 information bits followed by eight Encoder Tail Bits, as shown in Figure 7.1.3.5.2-1.

Forward Traffic Channel frames sent with Rate Set 2 at the 14400 bps transmission rate shall consist of 288 bits. These 288 bits shall be composed of one Reserved/Flag bit (see 7.1.3.5.2.5) followed by 267 information bits, 12 frame quality indicator (CRC) bits, and eight Encoder Tail Bits, as shown in Figure 7.1.3.5.2-2.

Forward Traffic Channel frames sent with Rate Set 2 at the 7200 bps transmission rate shall consist of 144 bits. These 144 bits shall be composed of one Reserved/Flag bit followed by 125 information bits, ten frame quality indicator (CRC) bits, and eight Encoder Tail Bits, as shown in Figure 7.1.3.5.2-2.

Forward Traffic Channel frames sent with Rate Set 2 at the 3600 bps transmission rate shall consist of 72 bits. These 72 bits shall be composed of one Reserved/Flag bit followed by 55 information bits, eight frame quality indicator (CRC) bits, and eight Encoder Tail Bits, as shown in Figure 7.1.3.5.2-2.

Forward Traffic Channel frames sent with Rate Set 2 at the 1800 bps transmission rate shall consist of 36 bits. These 36 bits shall be composed of one Reserved/Flag bit followed by 21 information bits, six frame quality indicator (CRC) bits, and eight Encoder Tail Bits, as shown in Figure 7.1.3.5.2-2.

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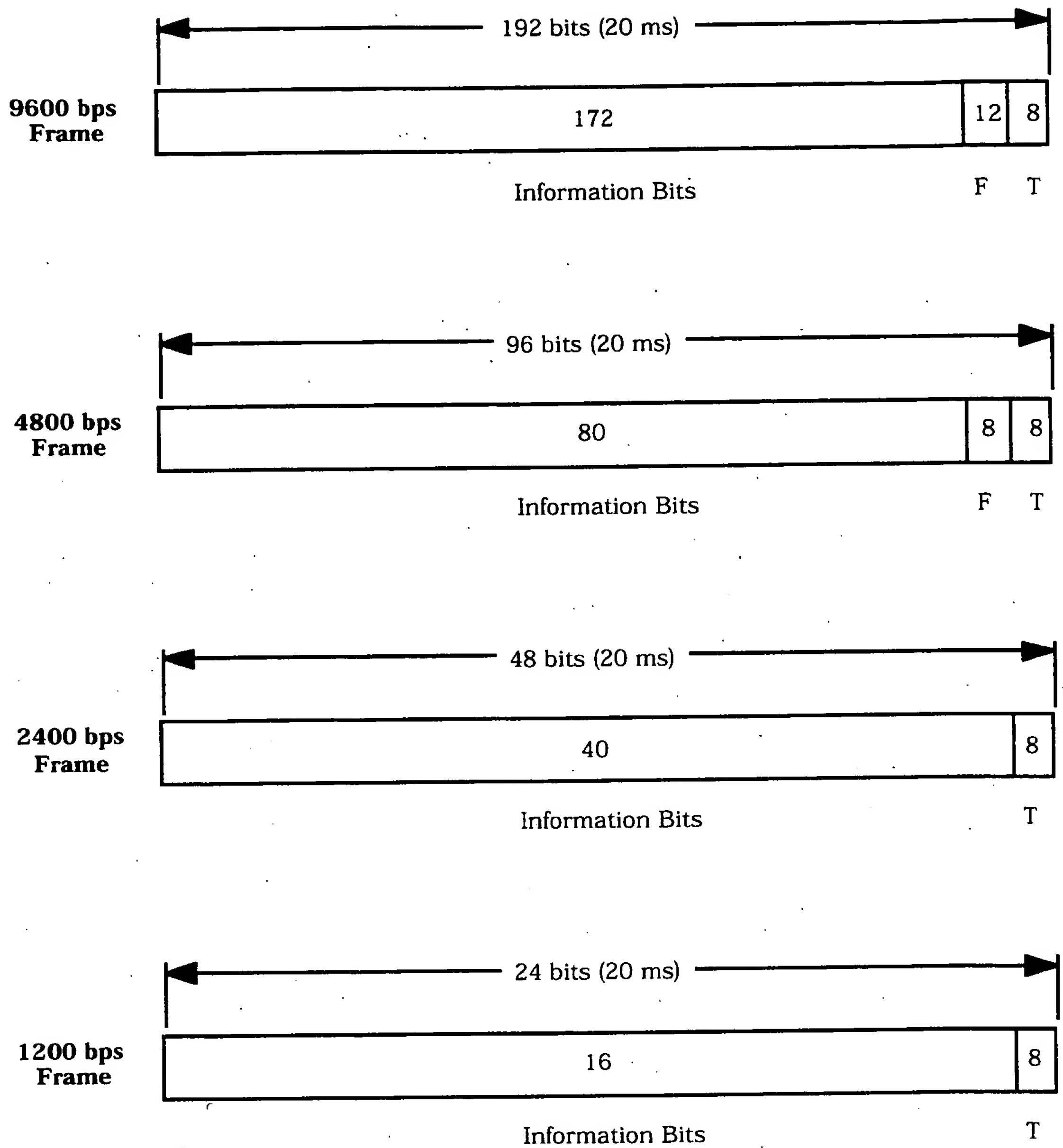
[5] The Forward Traffic Channel time offset is the same as the Reverse Traffic Channel time offset.

If Multiplex Option 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, or 16 is supported and the Forward Traffic Channel contains at least one Supplemental Code Channel in addition to the Fundamental Code Channel, the fundamental data block supplied by the multiplex option shall be transmitted on the Fundamental Code Channel, and the supplemental data blocks, if any, supplied by the multiplex option (see 7.1.3.5.14 and 7.1.3.5.15) shall be transmitted on a Supplemental Code Channel.

**Table 7.1.3.5.2-1. Forward Traffic Channel Frame Structure Summary**

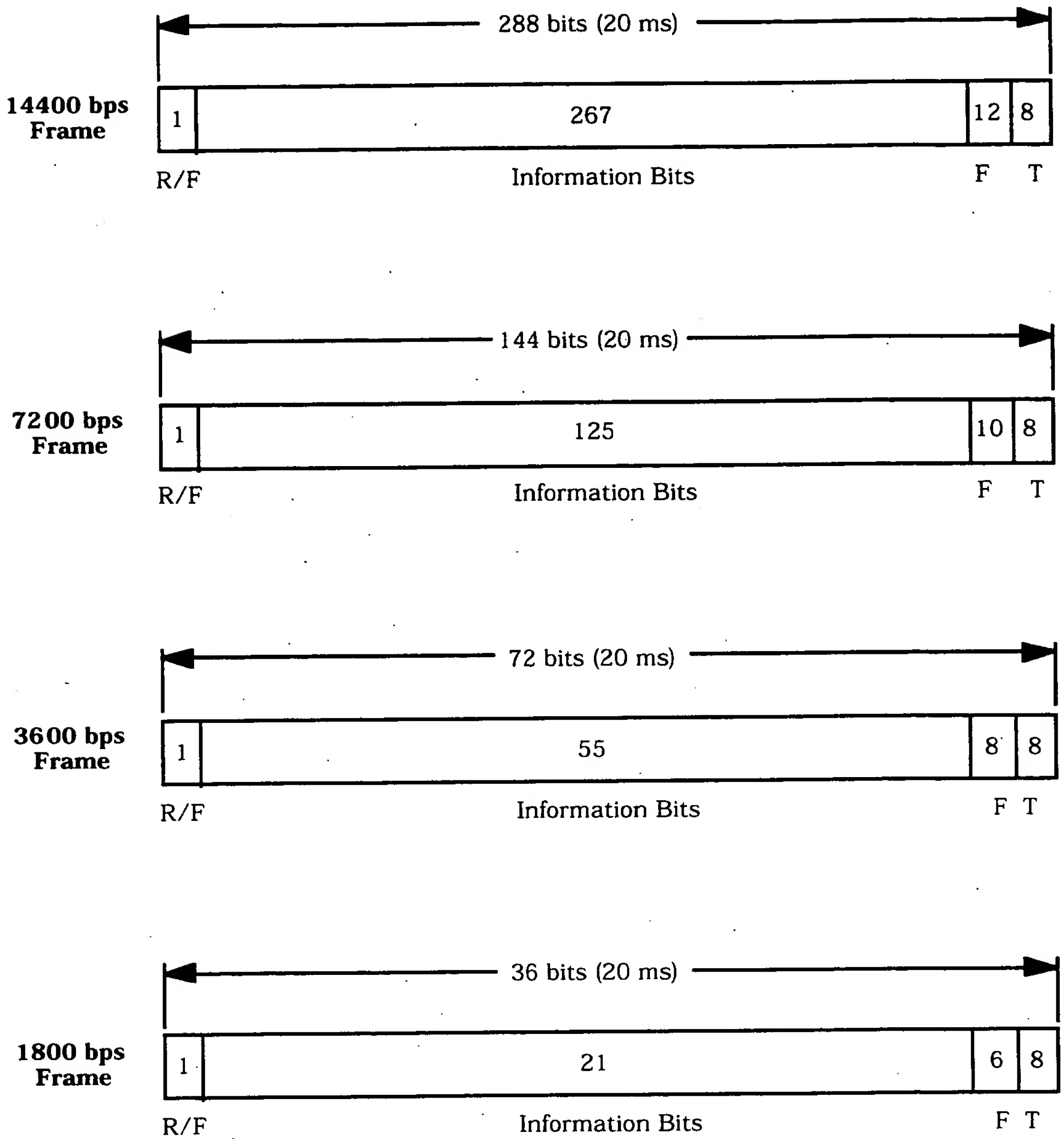
| Rate Set | Transmission Rate (bps) | Number of Bits per Frame | | | | |
|---|---|---|---|---|---|---|
| | | Total | Reserved/ Flag | Information | Frame Quality Indicator | Encoder Tail Bits |
| 1 | 9600 | 192 | 0 | 172 | 12 | 8 |
| | 4800* | 96 | 0 | 80 | 8 | 8 |
| | 2400* | 48 | 0 | 40 | 0 | 8 |
| | 1200* | 24 | 0 | 16 | 0 | 8 |
| 2 | 14400 | 288 | 1 | 267 | 12 | 8 |
| | 7200* | 144 | 1 | 125 | 10 | 8 |
| | 3600* | 72 | 1 | 55 | 8 | 8 |
| | 1800* | 36 | 1 | 21 | 6 | 8 |

* Applicable to Forward Fundamental Code Channel only; not permitted on Forward Supplemental Code Channels.




**Notation**
F - Frame Quality Indicator (CRC)
T - Encoder Tail Bits

**Figure 7.1.3.5.2-1. Forward Traffic Channel Frame Structure for Rate Set 1**




**Notation**

R/F - Reserved/Flag Bit
F - Frame Quality Indicator (CRC)
T - Encoder Tail Bits

**Figure 7.1.3.5.2-2. Forward Traffic Channel Frame Structure for Rate Set 2**

7.1.3.5.2.1 Forward Traffic Channel Frame Quality Indicator

Each frame with Rate Set 2 and the 9600 and 4800 bps frames of Rate Set 1 shall include a frame quality indicator. This frame quality indicator is a CRC.[6] No frame quality indicator is used for the 2400 and 1200 bps transmission rates of Rate Set 1.

The frame quality indicator (CRC) shall be calculated on all bits within the frame, except the frame quality indicator itself and the Encoder Tail Bits. The 9600 bps transmissions with Rate Set 1 and the 14400 bps transmissions with Rate Set 2 shall use a 12-bit frame quality indicator. The 7200 bps transmissions with Rate Set 2 shall use a 10-bit frame quality indicator.

The 4800 bps transmissions with Rate Set 1 and the 3600 bps transmissions with Rate Set 2 shall use an 8-bit frame quality indicator. The 1800 bps transmissions with Rate Set 2 shall use a 6-bit frame quality indicator.

The generator polynomials for the frame quality indicator shall be as follows:

$g(x) = x^{12} + x^{11} + x^{10} + x^9 + x^8 + x^4 + x + 1$ for the 12-bit frame quality indicator,

$g(x) = x^{10} + x^9 + x^8 + x^7 + x^6 + x^4 + x^3 + 1$ for the 10-bit frame quality indicator,

$g(x) = x^8 + x^7 + x^4 + x^3 + x + 1$ for the 8-bit frame quality indicator, and

$g(x) = x^6 + x^2 + x + 1$ for the 6-bit frame quality indicator.

The frame quality indicators shall be computed according to the following procedure using the logic shown in Figures 7.1.3.5.2.1-1 through 7.1.3.5.2.1-4:

- Initially, all shift register elements shall be set to logical one and the switches shall be set in the up position.
- The register shall be clocked a number of times equal to the number of reserved and information bits in the frame with those bits as input. For Rate Set 1, where the frame quality indicator is used, the number of Reserved bits and information bits per frame is 172 and 80 for the 9600 and 4800 bps transmission rates, respectively. For Rate Set 2, the number of Reserved and information bits per frame is 268, 126, 56, and 22 for the 14400, 7200, 3600, and 1800 bps transmission rates, respectively.
- The switches shall be set in the down position so that the output is a modulo-2 addition with a '0' and the successive shift register inputs are '0'.
- The register shall be clocked an additional number of times equal to the number of bits in the frame quality indicator (i.e., 12, 10, 8, or 6).
- These additional bits shall be the frame quality indicator bits.
- The bits shall be transmitted in the order calculated.

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[6] The frame quality indicator supports two functions at the receiver: The first function is to determine whether the frame is in error. The second function is to assist in the determination of the data rate of the received frame. Other parameters may be needed for rate determination in addition to the frame quality indicator, such as symbol error rate evaluated at the four data rates of the rate set.

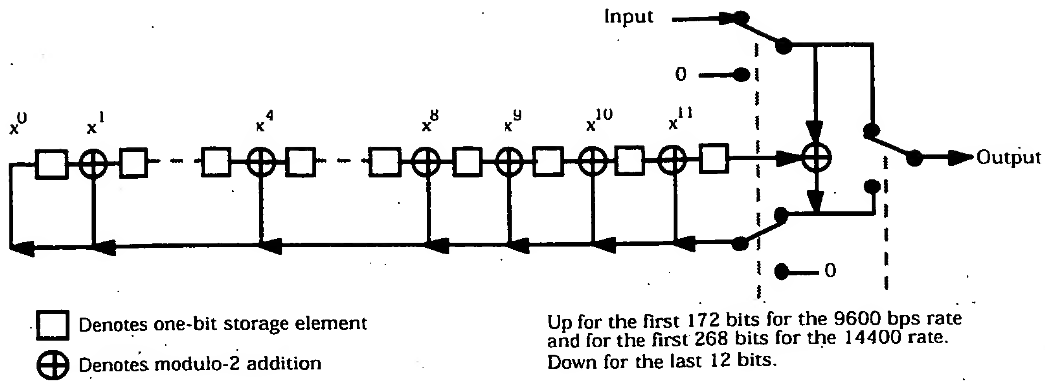



**Figure 7.1.3.5.2.1-1. Forward Traffic Channel Frame Quality Indicator Calculation for the 12-Bit Frame Quality Indicator**

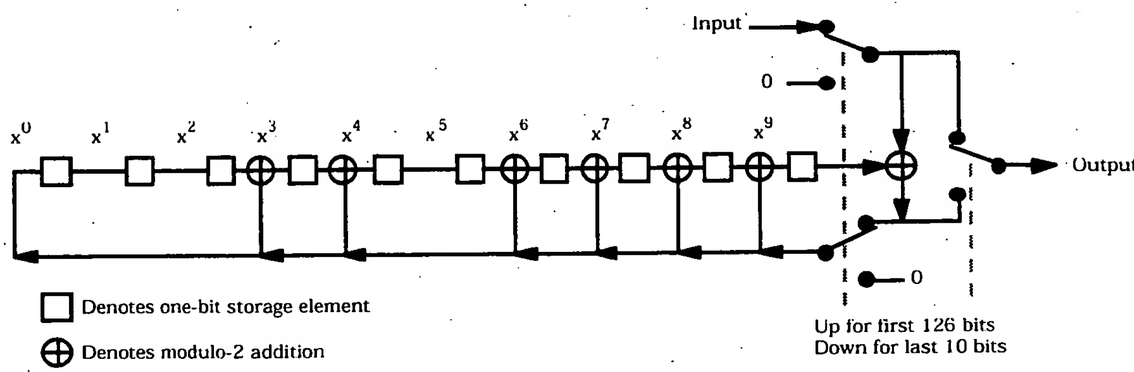



**Figure 7.1.3.5.2.1-2. Forward Traffic Channel Frame Quality Indicator Calculation for the 10-Bit Frame Quality Indicator**

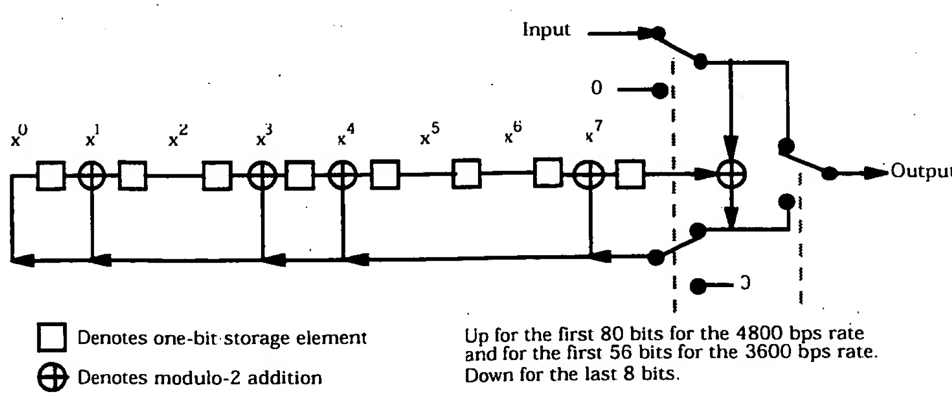



**Figure 7.1.3.5.2.1-3. Forward Traffic Channel Frame Quality Indicator Calculation for the 8-Bit Frame Quality Indicator**

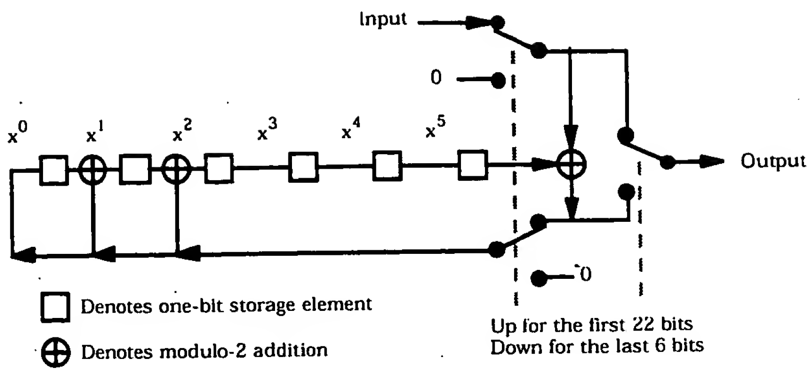



**Figure 7.1.3.5.2.1-4. Forward Traffic Channel Frame Quality Indicator Calculation for the 6-Bit Frame Quality Indicator**

7.1.3.5.2.2 Forward Traffic Channel Encoder Tail Bits

The last eight bits of each Forward Traffic Channel frame are called the Encoder Tail Bits. These eight bits shall be set to '0'.

7.1.3.5.2.3 Reserved

7.1.3.5.2.4 Reserved

7.1.3.5.2.5 Forward Traffic Channel Reserved/Flag Bit

The Reserved/Flag Bit may be used on the Forward Fundamental Code Channel for Multiplex Options 4, 6, 8, 10, 12, 14, and 16; otherwise, this bit is reserved and shall be set to '0'. The Reserved/Flag Bit is used with Rate Set 2.

If the Reserved/Flag bit is used, the base station shall set this bit to '0' if the mobile station is to process the Forward Supplemental Code Channels in the second transmitted frame after the current frame (see 6.2.2.1). The base station should set this bit to '1' if the base station will not transmit to the mobile station on the Forward Supplemental Code Channels in the second frame after the current frame.

7.1.3.5.3 Forward Traffic Channel Convolutional Encoding

The data for Fundamental and Supplemental Code Channels of the Forward Traffic Channel shall be convolutionally encoded as specified in 7.1.3.1.3.

When generating Forward Traffic Channel data, the encoder shall be initialized to the all-zero state at the end of each 20 ms frame.

7.1.3.5.4 Forward Traffic Channel Code Symbol Repetition

Forward Fundamental Code Channel of the Forward Traffic Channel code symbol repetition shall be as specified in 7.1.3.1.4.

#### 7.1.3.5.5 Forward Traffic Channel Puncturing

For Rate Set 2, the code symbols resulting from the symbol repetition shall be punctured as specified in 7.1.3.1.5.

#### 7.1.3.5.6 Forward Traffic Channel Interleaving

The modulation symbols shall be interleaved as specified in 7.1.3.1.6.

#### 7.1.3.5.7 Forward Traffic Channel Data Scrambling

The data for Fundamental and Supplemental Code Channels of the Forward Traffic Channel shall be scrambled as specified in 7.1.3.1.7. The same long code mask is used for all code channels of the Forward Traffic Channel. The public long code mask shall be as shown in Figure 7.1.3.5.7-1. The permutation of the ESN bits in the public long code mask shall be as specified in 6.1.3.1.8. The generation of the private long code mask shall be as specified in Annex A.

| 41 … 32 | 31 … 0 |
|---|---|
| 1100011000 | Permuted ESN |

**Figure 7.1.3.5.7-1. Forward Traffic Channel Public Long Code Mask**

#### 7.1.3.5.8 Forward Traffic Channel Power Control Subchannel

The base station shall insert on every Fundamental Code Channel of the Forward Traffic Channel a power control subchannel as specified in 7.1.3.1.8.

#### 7.1.3.5.9 Forward Traffic Channel Orthogonal Spreading

The Fundamental and Supplemental Code Channels of the Forward Traffic Channel shall be spread with a Walsh function as specified in 7.1.3.1.9.

#### 7.1.3.5.10 Forward Traffic Channel Quadrature Spreading

The Fundamental and Supplemental Code Channels of the Forward Traffic Channel shall be PN spread as specified in 7.1.3.1.10.

#### 7.1.3.5.11 Forward Traffic Channel Filtering

Filtering for the Fundamental and Supplemental Code Channels of the Forward Traffic Channel shall be as specified in 7.1.3.1.11.

#### 7.1.3.5.12 Multiplex Option 1 Information

Multiplex Option 1 applies to Rate Set 1. It provides for the transmission of primary traffic and either signaling or secondary traffic. Signaling traffic may be transmitted via blank-and-burst with the signaling traffic using all of the frame or via dim-and-burst with the

primary traffic and signaling traffic sharing the frame. Multiplex Option 1 also supports the transmission of secondary traffic. When primary traffic is available, secondary traffic is transmitted via dim-and-burst with the primary traffic and secondary traffic sharing the frame. When primary traffic is not available, secondary traffic is transmitted via blank-and-burst with the secondary traffic using all of the frame. The information bit structures for primary and signaling traffic are specified in 7.1.3.5.12.1; the information bit structures for secondary traffic are specified in 7.1.3.5.12.2. Table 7.1.3.5.12-1 shows the information bit structures supported by Multiplex Option 1.

The base station shall support Multiplex Option 1. The base station shall support the transmission of primary traffic and of signaling traffic, using the information bit structures specified in 7.1.3.5.12.1. The base station may support secondary traffic; and, if so, the base station shall also use the information bit structures specified in 7.1.3.5.12.2.

**Table 7.1.3.5.12-1. Forward Traffic Channel Information Bits for Multiplex Option 1**

| | Format Bits | | | | | |
|---|---|---|---|---|---|---|
| Transmit Rate (bits/sec) | Mixed Mode (MM) | Traffic Type (TT) | Traffic Mode (TM) | Primary Traffic (bits/frame) | Signaling Traffic (bits/frame) | Secondary Traffic (bits/frame) |
| 9600 | '0' | – | – | 171 | 0 | 0 |
| | '1' | '0' | '00' | 80 | 88 | 0 |
| | '1' | '0' | '01' | 40 | 128 | 0 |
| | '1' | '0' | '10' | 16 | 152 | 0 |
| | '1' | '0' | '11' | 0 | 168 | 0 |
| * | '1' | '1' | '00' | 80 | 0 | 88 |
| * | '1' | '1' | '01' | 40 | 0 | 128 |
| * | '1' | '1' | '10' | 16 | 0 | 152 |
| * | '1' | '1' | '11' | 0 | 0 | 168 |
| 4800 | – | – | – | 80 | 0 | 0 |
| 2400 | – | – | – | 40 | 0 | 0 |
| 1200 | – | – | – | 16 | 0 | 0 |

Note: Base station support of the secondary traffic structures, marked with *, is optional.

### 7.1.3.5.12.1 Primary and Signaling Traffic with Multiplex Option 1

The base station shall support the information bit structures described in Table 7.1.3.5.12-1 and Figure 7.1.3.5.12.1-1.

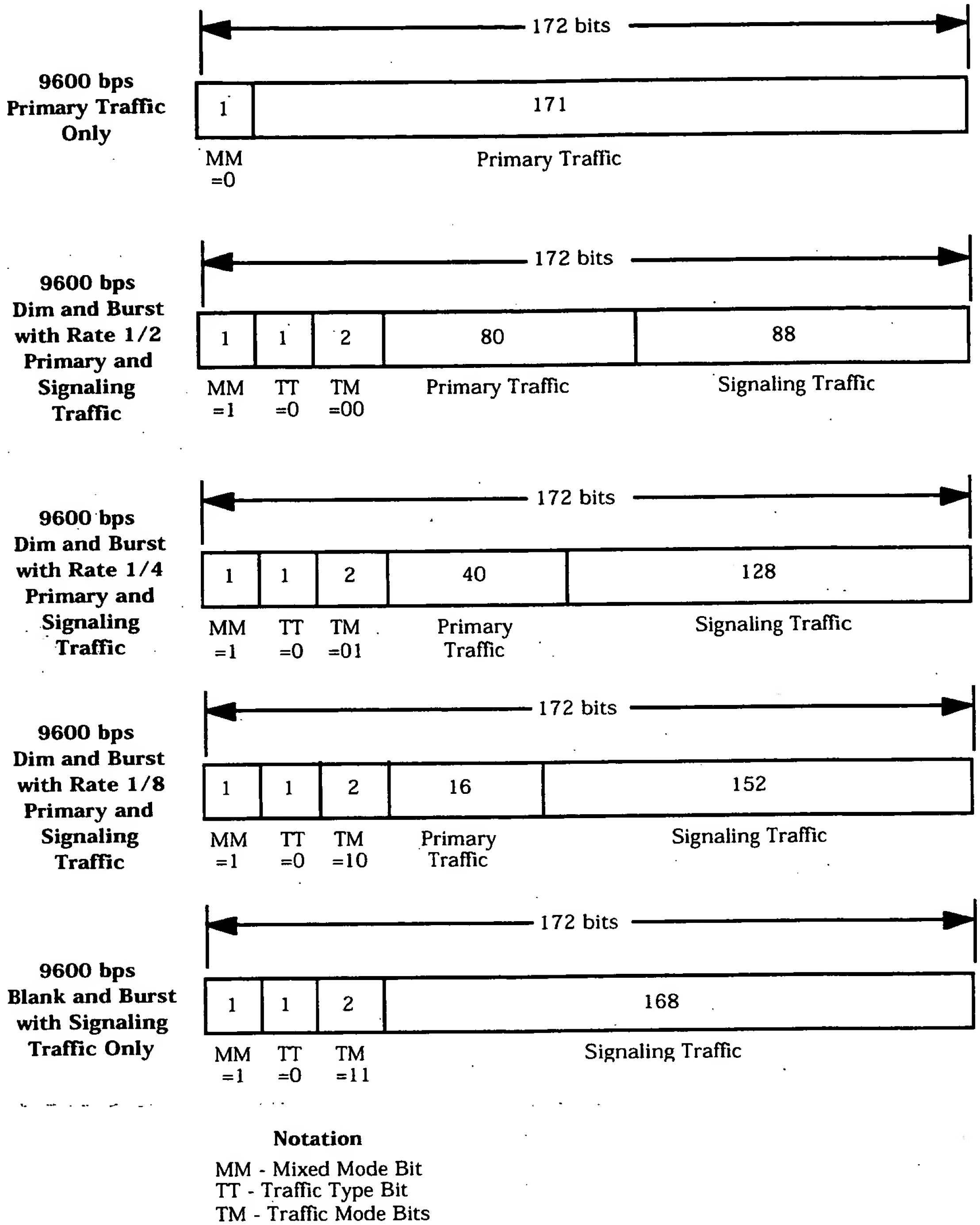



**Figure 7.1.3.5.12.1-1. Information Bits for Primary Traffic and Signaling Traffic for Multiplex Option 1 (Part 1 of 2)**

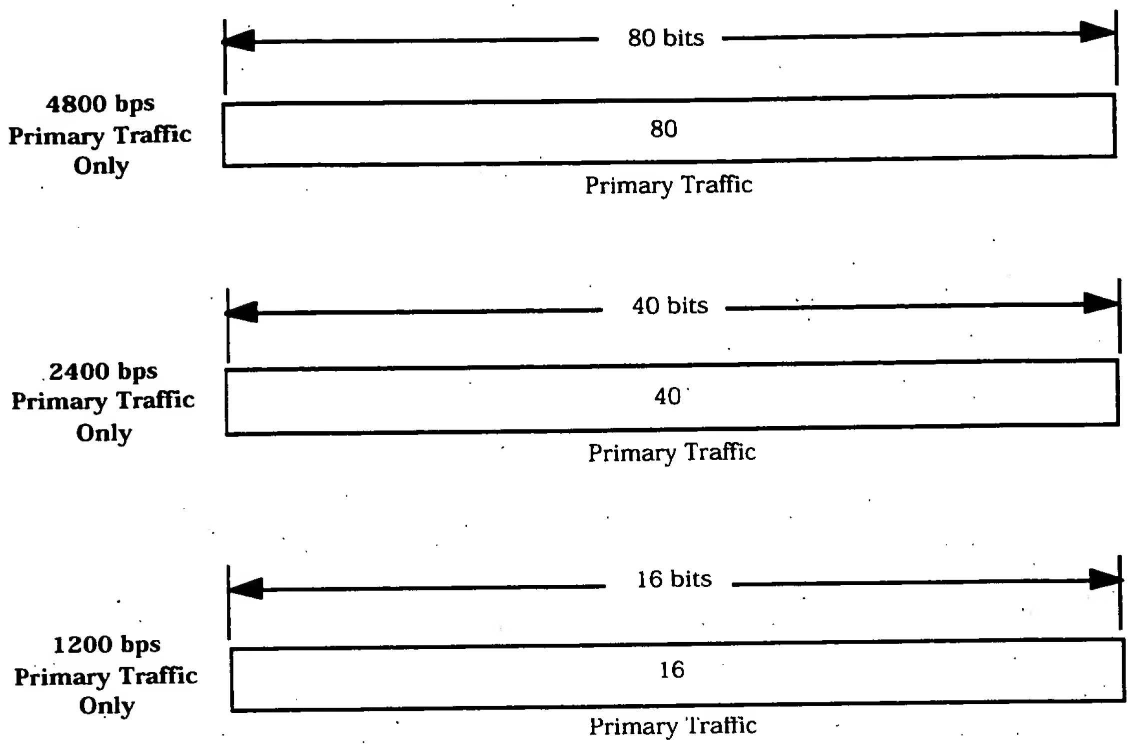



**Figure 7.1.3.5.12.1-1. Information Bits for Primary Traffic and Signaling Traffic for Multiplex Option 1 (Part 2 of 2)**

7.1.3.5.12.2 Secondary Traffic with Multiplex Option 1

If the base station supports secondary traffic, the base station shall use the information bit structures described in Table 7.1.3.5.12-1 and Figure 7.1.3.5.12.2-1.

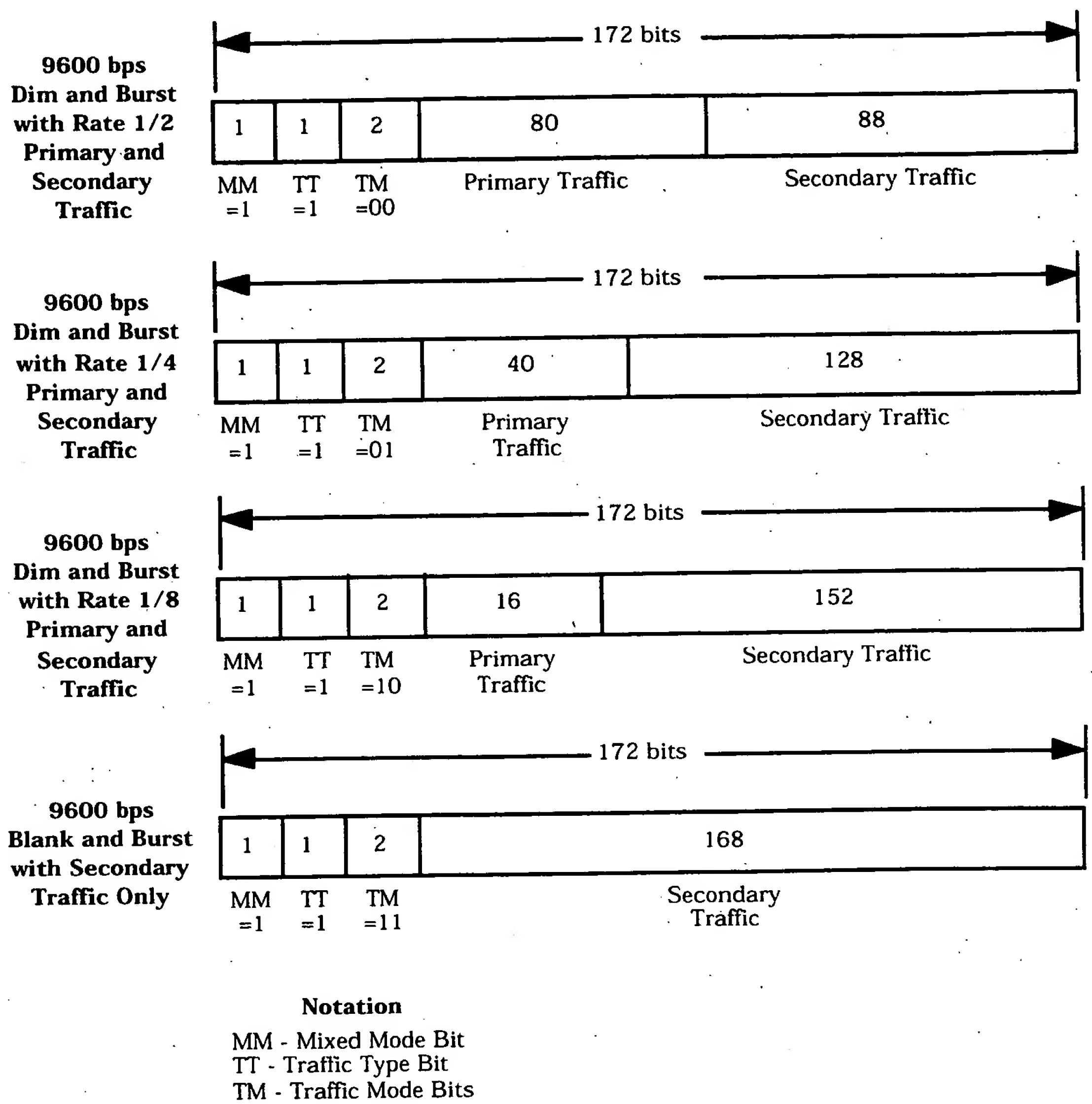



**Figure 7.1.3.5.12.2-1. Information Bits for Secondary Traffic for Multiplex Option 1**

7.1.3.5.12.3 Use of Various Information Bit Formats for Multiplex Option 1

When neither primary traffic nor secondary traffic is available, the base station shall transmit signaling traffic using only blank-and-burst frames. When not transmitting signaling traffic, the base station shall transmit only null Traffic Channel data (see 7.1.3.5.12.5) frames.

When primary traffic is available and secondary traffic is not available, the base station shall use the information formats specified in 7.1.3.5.12.1. The base station should use the dim-and-burst information formats specified in 7.1.3.5.12.1 for signaling traffic.

When primary traffic is not available and secondary traffic is available, the base station shall use the information formats specified in 7.1.3.5.12.2 to transmit secondary traffic. The base station shall use the blank-and-burst format specified in 7.1.3.5.12.1 for signaling traffic. The base station shall transmit null Traffic Channel data, if neither secondary traffic nor signaling traffic is available.

When both primary traffic and secondary traffic are available, the base station shall use the information formats specified in 7.1.3.5.12.1 and 7.1.3.5.12.2. The base station shall not transmit null Traffic Channel data. The base station should use the dim-and-burst information formats specified in 7.1.3.5.12.1 for signaling traffic.

7.1.3.5.12.4 Control of Service Options for Multiplex Option 1

Multiplex Option 1 controls the number of bits that the service option supplies for a frame.

The base station shall use the following rules when primary traffic is available: If signaling traffic is to be transmitted in a frame, Multiplex Option 1 shall either restrict primary traffic to zero bits (for a blank-and-burst frame) or to fewer than 171 bits (for a dim-and-burst frame). If secondary traffic is to be transmitted in a frame, Multiplex Option 1 may restrict primary traffic to fewer than 171 bits, but shall allow primary traffic at least 16 bits for the frame. In all other cases, Multiplex Option 1 shall allow primary traffic either 16, 40, 80, or 171 bits for a frame.

7.1.3.5.12.5 Null Traffic Channel Data

Null Traffic Channel data shall consist of primary-traffic-only frames, sent at the lowest negotiated transmission rate, with all primary traffic bits set equal to '1'.

The base station transmits null Traffic Channel data when there is not any primary, secondary, or signaling traffic available. Null Traffic Channel data serves as a "keep-alive" operation so that the mobile station can maintain connectivity with the base station.

7.1.3.5.13 Multiplex Option 2 Information

Multiplex Option 2 applies to Rate Set 2. It provides for the transmission of primary traffic, secondary traffic, and signaling traffic. Signaling traffic may be transmitted via blank-and-burst with the signaling traffic using all of the frame, via dim-and-burst with the primary traffic and signaling traffic sharing the frame, or via dim-and-burst with the primary traffic, secondary traffic, and signaling traffic sharing the same frame. When primary traffic is available, secondary traffic is transmitted via dim-and-burst with the primary traffic,

secondary traffic, and possibly signaling traffic sharing the frame. When primary traffic is not available, secondary traffic is transmitted via blank-and-burst with the secondary traffic using all of the frame. The information bit structures for primary and signaling traffic are specified in 7.1.3.5.13.1; the information bit structures for secondary traffic are specified in 7.1.3.5.13.2. Table 7.1.3.5.13-1 shows the information bit structures supported by Multiplex Option 2.

The base station may support Multiplex Option 2. If the base station supports Multiplex Option 2, it shall support the transmission of primary traffic and of signaling traffic, using the information bit structures specified in 7.1.3.5.13.1. The base station may support secondary traffic, and, if so, the base station shall also use the information bit structures specified in 7.1.3.5.13.2.

1 **Table 7.1.3.5.13-1. Forward Traffic Channel Information Bits for Multiplex Option 2**

| Transmit Rate (bits/sec) | Format Bits: Mixed Mode (MM) | Format Bits: Frame Mode (FM) | Primary Traffic (bits/frame) | Signaling Traffic (bits/frame) | Secondary Traffic (bits/frame) |
|---|---|---|---|---|---|
| 14400 | '0' | – | 266 | 0 | 0 |
| | '1' | '0000' | 124 | 138 | 0 |
| | '1' | '0001' | 54 | 208 | 0 |
| | '1' | '0010' | 20 | 242 | 0 |
| | '1' | '0011' | 0 | 262 | 0 |
| * | '1' | '0100' | 124 | 0 | 138 |
| * | '1' | '0101' | 54 | 0 | 208 |
| * | '1' | '0110' | 20 | 0 | 242 |
| * | '1' | '0111' | 0 | 0 | 262 |
| * | '1' | '1000' | 20 | 222 | 20 |
| 7200 | '0' | – | 124 | 0 | 0 |
| | '1' | '000' | 54 | 67 | 0 |
| | '1' | '001' | 20 | 101 | 0 |
| | '1' | '010' | 0 | 121 | 0 |
| * | '1' | '011' | 54 | 0 | 67 |
| * | '1' | '100' | 20 | 0 | 101 |
| * | '1' | '101' | 0 | 0 | 121 |
| * | '1' | '110' | 20 | 81 | 20 |
| 3600 | '0' | – | 54 | 0 | 0 |
| | '1' | '00' | 20 | 32 | 0 |
| | '1' | '01' | 0 | 52 | 0 |
| * | '1' | '10' | 20 | 0 | 32 |
| * | '1' | '11' | 0 | 0 | 52 |
| 1800 | '0' | – | 20 | 0 | 0 |
| * | '1' | – | 0 | 0 | 20 |

2 Note: Mobile station support of the secondary traffic structures, marked with *, is optional.

7.1.3.5.13.1 Primary and Signaling Traffic with Multiplex Option 2

If the base station supports Multiplex Option 2, the base station shall use the information bit structures described in Table 7.1.3.5.13-1 and in Figure 7.1.3.5.13.1-1.

7.1.3.5.13.2 Secondary Traffic with Multiplex Option 2

If the base station supports Multiplex Option 2 and secondary traffic, the base station shall use the information bit structures described in Table 7.1.3.5.13-1 and Figure 7.1.3.5.13.2-1.

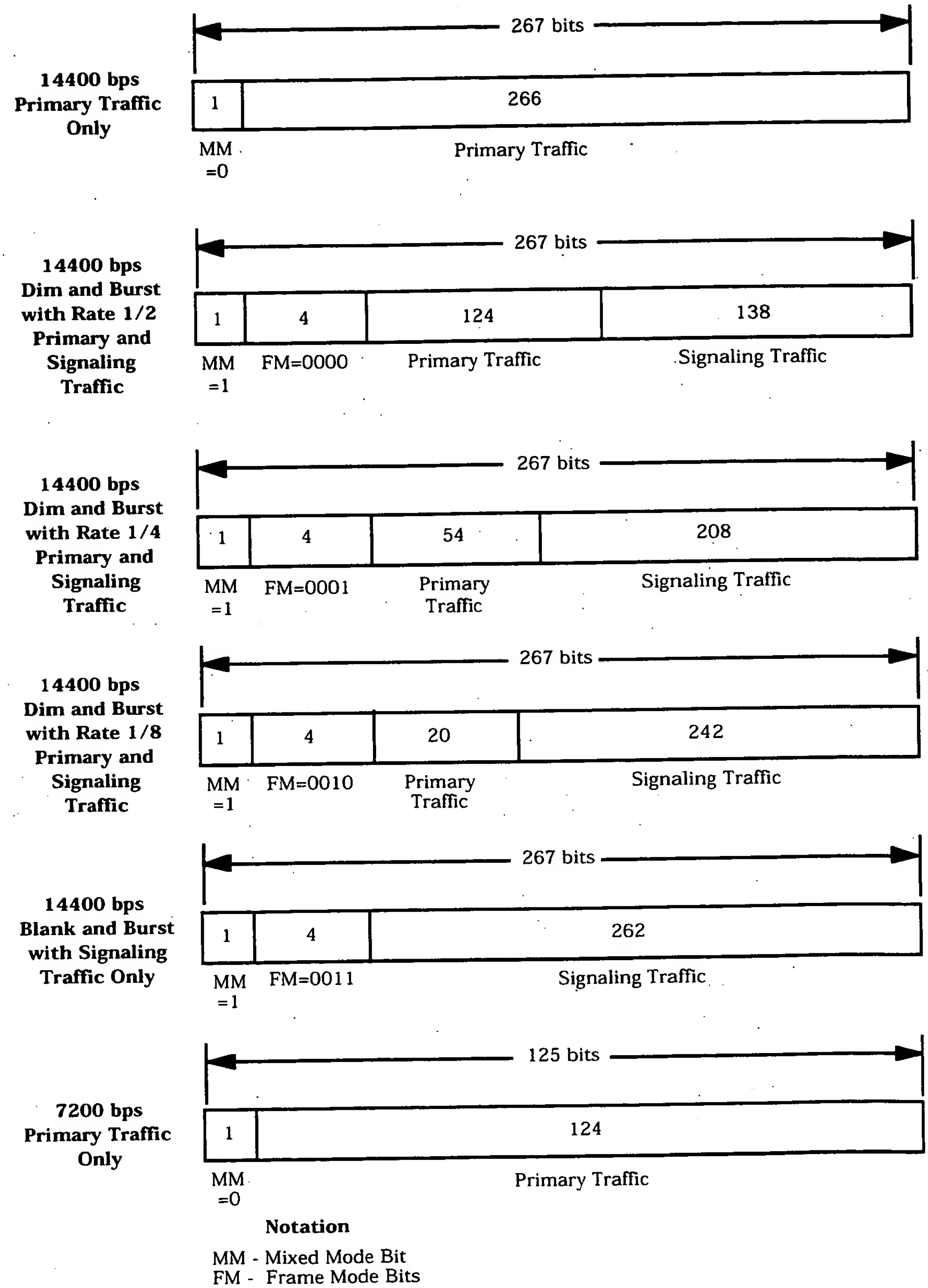



**Figure 7.1.3.5.13.1-1. Information Bits for Primary Traffic and Signaling Traffic for Multiplex Option 2 (Part 1 of 2)**

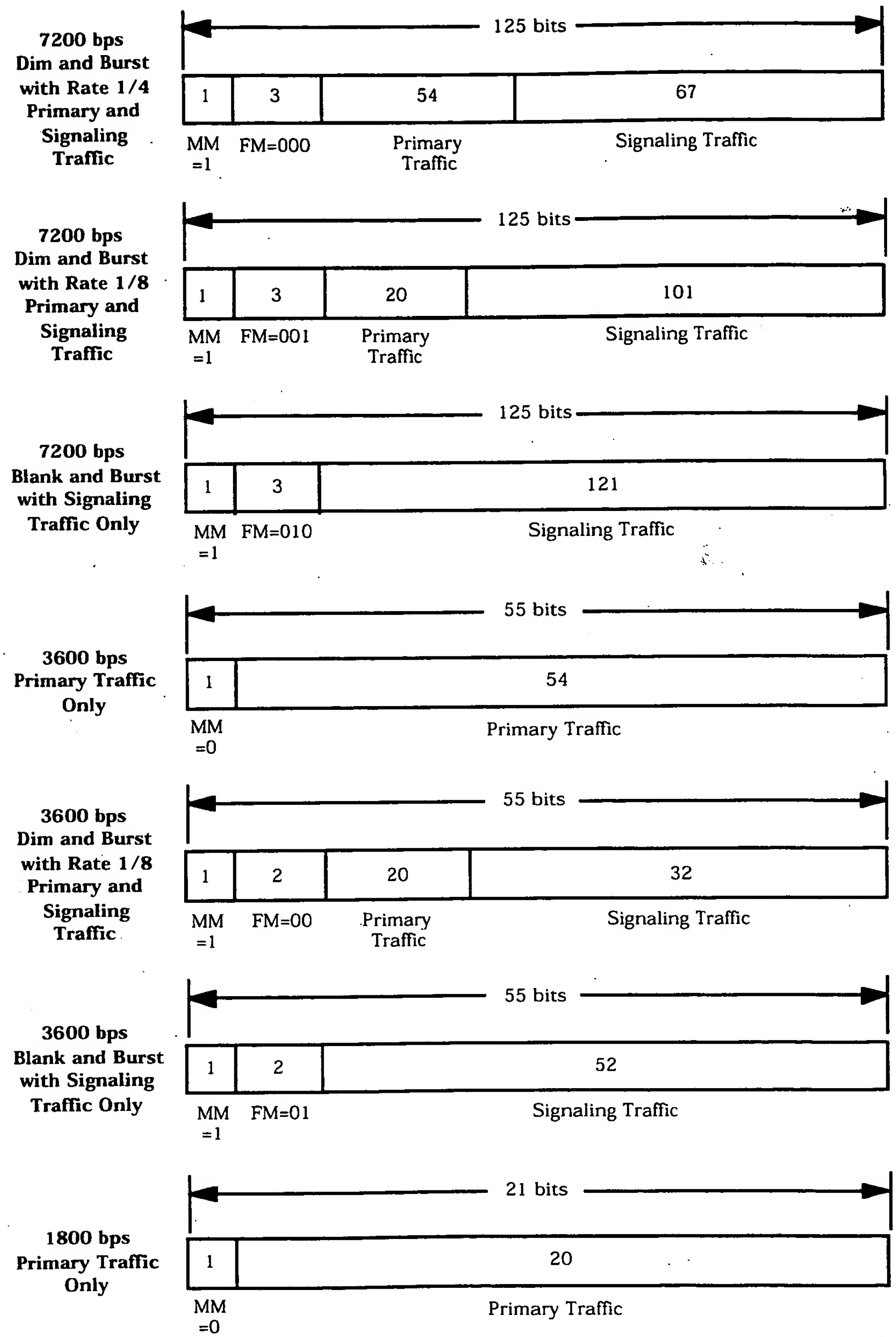



**Figure 7.1.3.5.13.1-1. Information Bits for Primary Traffic and Signaling Traffic for Multiplex Option 2 (Part 2 of 2)**

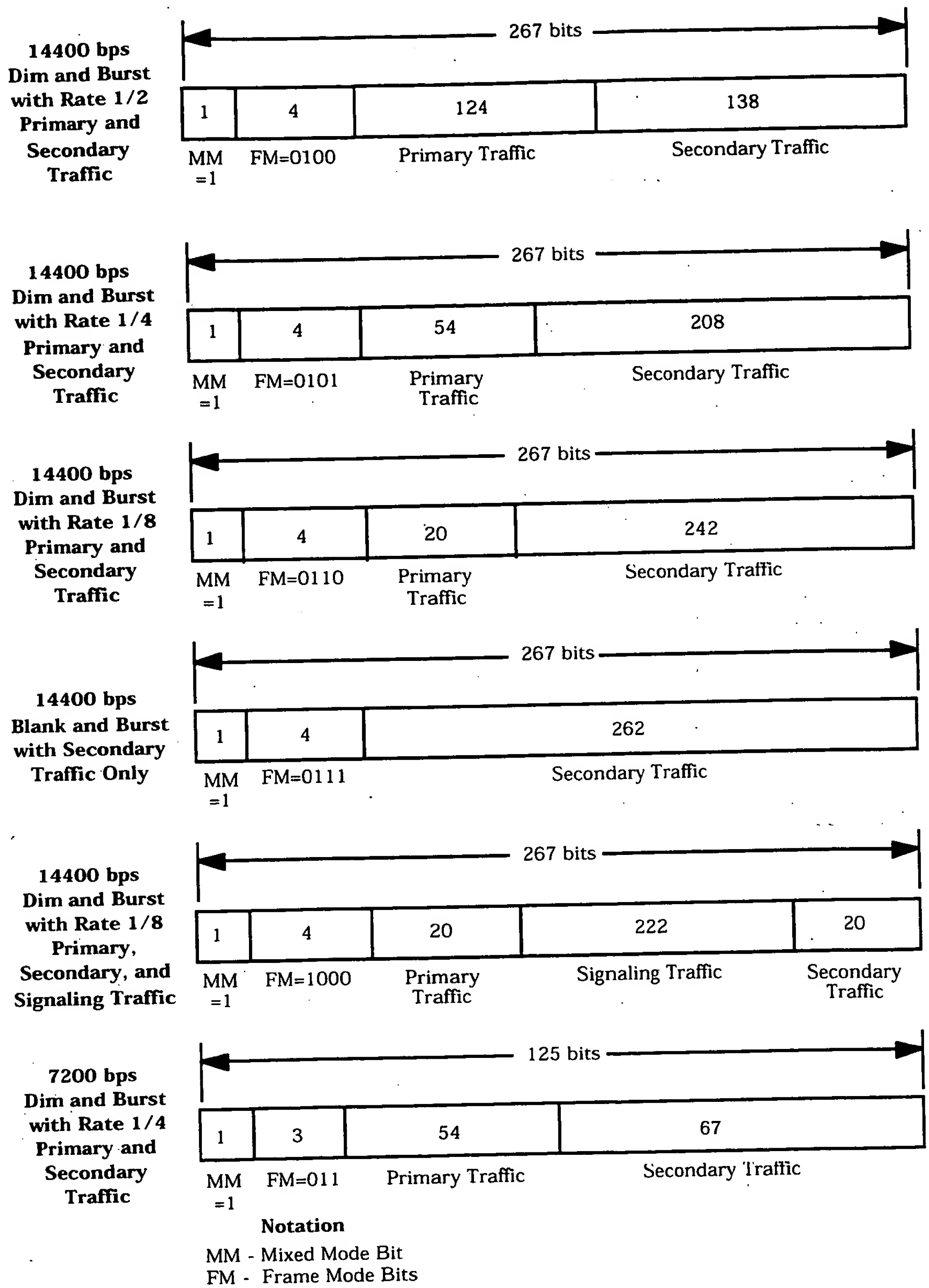



**Figure 7.1.3.5.13.2-1. Information Bits for Secondary Traffic for Multiplex Option 2 (Part 1 of 2)**

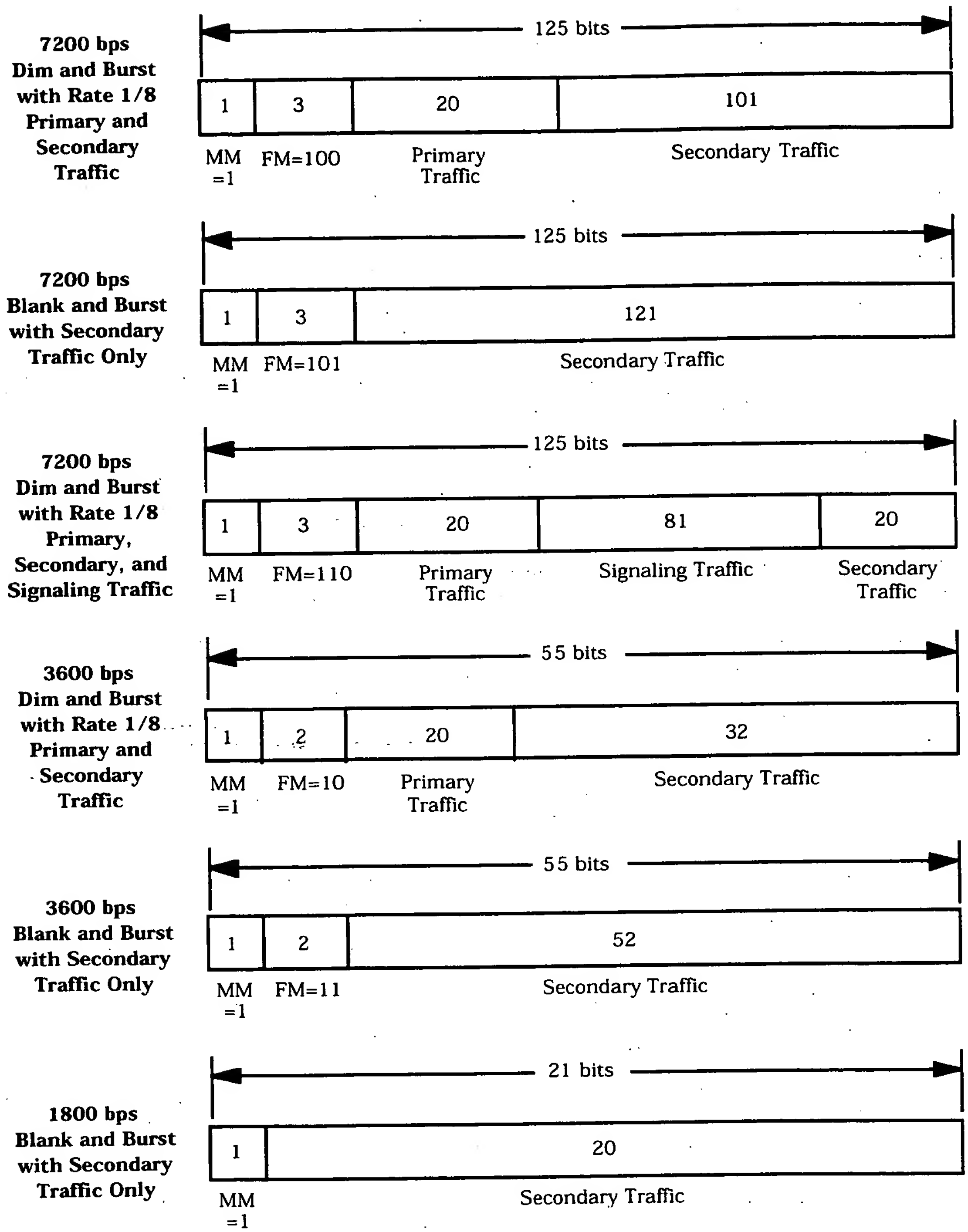



**Figure 7.1.3.5.13.2-1. Information Bits for Secondary Traffic for Multiplex Option 2 (Part 2 of 2)**

#### 7.1.3.5.13.3 Use of Various Information Bit Formats for Multiplex Option 2

When neither primary traffic nor secondary traffic is available, the base station shall transmit signaling traffic using only blank-and-burst frames. When not transmitting signaling traffic, the base station shall transmit only null Traffic Channel data (see 7.1.3.5.13.5) frames.

When primary traffic is available and secondary traffic is not available, the base station shall use the information formats specified in 7.1.3.5.13.1. The base station should use the dim-and-burst information formats specified in 7.1.3.5.13.1 for signaling traffic.

When primary traffic is not available and secondary traffic is available, the base station shall use the information formats specified in 7.1.3.5.13.2 to transmit secondary traffic. The base station shall use the blank-and-burst formats specified in 7.1.3.5.13.1 for signaling traffic. The base station shall transmit null Traffic Channel data if neither secondary traffic nor signaling traffic is available.

When both primary traffic and secondary traffic are available, the base station shall use the information formats specified in 7.1.3.5.13.1 and 7.1.3.5.13.2. The base station shall not transmit null Traffic Channel data. The base station should use the dim-and-burst information formats specified in 7.1.3.5.13.2 for signaling traffic.

#### 7.1.3.5.13.4 Control of Service Options for Multiplex Option 2

Multiplex Option 2 controls the number of bits that the service option supplies for a frame. The base station shall use the following rules when primary traffic is available: If signaling traffic is to be transmitted in a frame, Multiplex Option 2 shall either restrict primary traffic to zero bits (for a blank-and-burst frame) or to fewer than 266 bits (for a dim-and-burst frame). If secondary traffic is to be transmitted in a frame, Multiplex Option 2 may restrict primary traffic to fewer than 266 bits but shall allow primary traffic at least 20 bits for the frame. In all other cases, Multiplex Option 2 shall allow primary traffic either 20, 54, 124, or 266 bits for a frame.

#### 7.1.3.5.13.5 Null Traffic Channel Data

Null Traffic Channel data shall consist of primary-traffic-only frames, sent at the lowest negotiated transmission rate, with all primary traffic bits set equal to '1'.

The base station transmits null Traffic Channel data when there is not any primary, secondary, or signaling traffic available. Null Traffic Channel data serves as a "keep-alive" operation so that the mobile station can maintain connectivity with the base station.

### 7.1.3.5.14 Multiplex Options 3, 5, 7, 9, 11, 13, and 15 Information

Multiplex Options 3, 5, 7, 9, 11, 13, and 15 apply to Rate Set 1. Multiplex Option 2n + 1, n = 1 to 7, provides one fundamental data block and up to n supplemental data blocks to the Forward Traffic Channel per 20 ms, as shown in Table 7.1.3.5.14-1.

**Table 7.1.3.5.14-1. Number of Data Blocks Provided by Multiplex Options 3, 5, 7, 9, 11, 13, and 15**

| Multiplex Option | Number of Fundamental Data Blocks | Maximum Number of Supplemental Data Blocks |
|---|---|---|
| 3 | 1 | 1 |
| 5 | 1 | 2 |
| 7 | 1 | 3 |
| 9 | 1 | 4 |
| 11 | 1 | 5 |
| 13 | 1 | 6 |
| 15 | 1 | 7 |

The number of data blocks provided shall not exceed the number allowed for the multiplex option.

Multiplex Options 3, 5, 7, 9, 11, 13, and 15 provide for the transmission of primary traffic, secondary traffic, and signaling traffic.

The base station shall transmit signaling traffic, when available, only in the fundamental data block via the blank-and-burst format with the signaling traffic using all of the fundamental data block or via the dim-and-burst format with primary traffic and signaling traffic sharing the fundamental data block.

Primary traffic and secondary traffic may be transmitted in the fundamental data block or in supplemental data blocks. When primary traffic is available, secondary traffic may be transmitted in the fundamental data block via the dim-and-burst format with the primary traffic and secondary traffic sharing the fundamental data block. When primary traffic is not available, secondary traffic may be transmitted in the fundamental data block via the blank-and-burst format with the secondary traffic using all of the fundamental data block. When primary traffic is transmitted in a supplemental data block, the base station shall use the information bit structures specified in 7.1.3.5.14.1 for 9600 bps with primary traffic only. When secondary traffic is transmitted in a supplemental data block, the blank-and-burst format shall be used with the secondary traffic using all of the supplemental data block. Primary and secondary traffic shall not share a supplemental data block.

The information bit structures for primary and signaling traffic for Multiplex Options 3, 5, 7, 9, 11, 13, and 15 are specified in 7.1.3.5.14.1; the information bit structures for secondary traffic are specified in 7.1.3.5.14.2. Table 7.1.3.5.14-2 shows the information bit structures supported by Multiplex Options 3, 5, 7, 9, 11, 13, and 15.

The base station may support Multiplex Options 3, 5, 7, 9, 11, 13, and 15. If the base station supports Multiplex Option 3, 5, 7, 9, 11, 13, or 15, the base station shall support the transmission of primary traffic and signaling traffic using the information bit structures specified in 7.1.3.5.14.1. The base station may support secondary traffic; and, if so, the base station shall also use the information bit structures specified in 7.1.3.5.14.2.

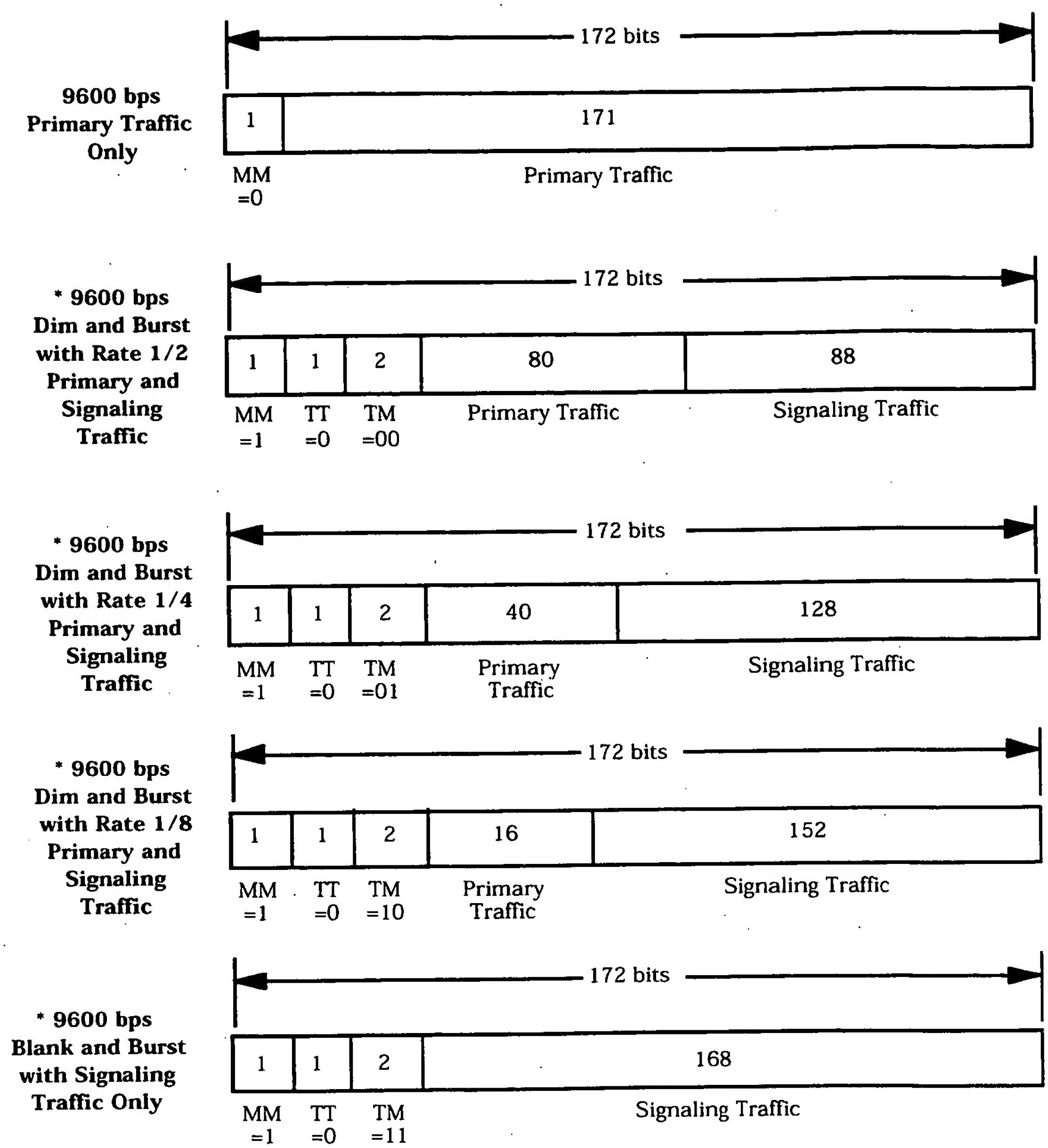
**Table 7.1.3.5.14-2. Forward Traffic Channel Information Bits for Multiplex Options 3, 5, 7, 9, 11, 13, and 15**

| | Format Bits | | | | | | |
|---|---|---|---|---|---|---|---|
| **Transmit Rate (bits/ sec)** | **Mixed Mode (MM)** | **Traffic Type (TT)** | **Traffic Mode (TM)** | **Primary Traffic (bits/ block)** | **Signaling Traffic (bits/ block)** | **Secondary Traffic (bits/ block)** | **Permitted in Supplemental Data Blocks** |
| | '0' | – | – | 171 | 0 | 0 | Y |
| | '1' | '0' | '00' | 80 | 88 | 0 | N |
| | '1' | '0' | '01' | 40 | 128 | 0 | N |
| | '1' | '0' | '10' | 16 | 152 | 0 | N |
| 9600 | '1' | '0' | '11' | 0 | 168 | 0 | N |
| * | '1' | '1' | '00' | 80 | 0 | 88 | N |
| * | '1' | '1' | '01' | 40 | 0 | 128 | N |
| * | '1' | '1' | '10' | 16 | 0 | 152 | N |
| * | '1' | '1' | '11' | 0 | 0 | 168 | Y |
| 4800 | – | – | – | 80 | 0 | 0 | N |
| 2400 | – | – | – | 40 | 0 | 0 | N |
| 1200 | – | – | – | 16 | 0 | 0 | N |

Note: Base station support of the secondary traffic structures, marked with *, is optional.

7.1.3.5.14.1 Primary and Signaling Traffic with Multiplex Options 3, 5, 7, 9, 11, 13, and 15

If the base station supports Multiplex Option 3, 5, 7, 9, 11, 13, or 15, the base station shall support the information bit structures described in Table 7.1.3.5.14-2 and in Figure 7.1.3.5.14.1-1.

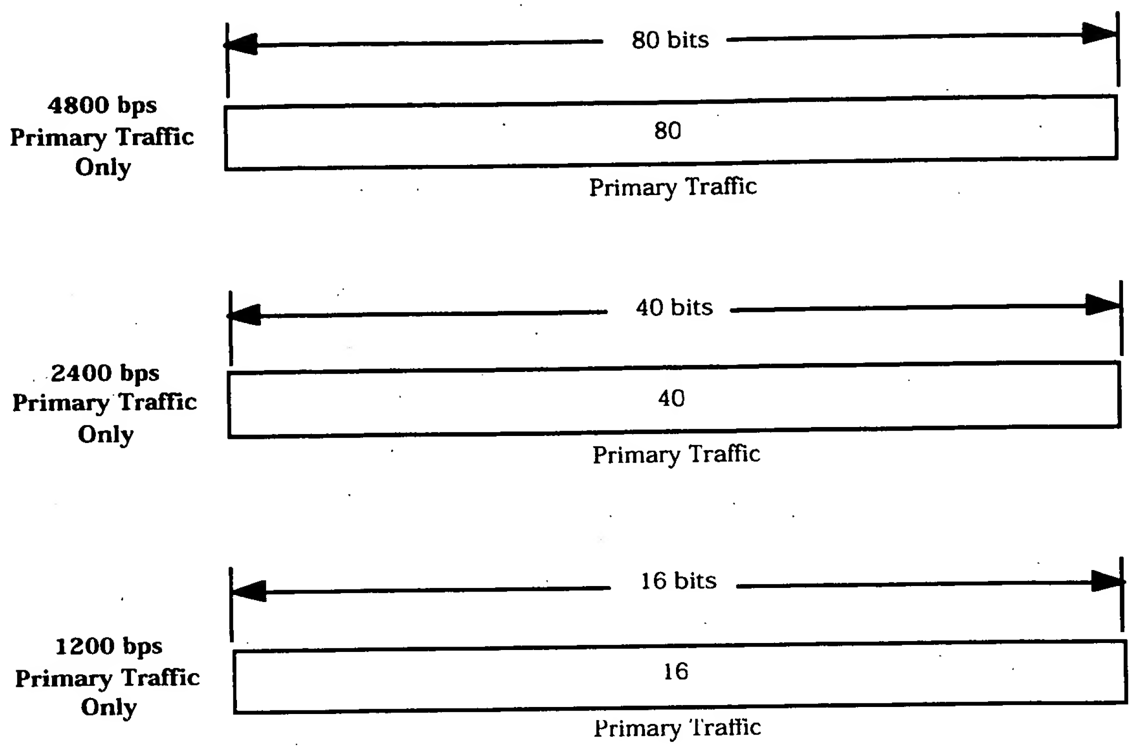



**Notation**

MM - Mixed Mode Bit
TT - Traffic Type Bit
TM - Traffic Mode Bits

* Applicable to the fundamental data block only; not permitted in the supplemental data blocks.

**Figure 7.1.3.5.14.1-1. Information Bits for Primary Traffic and Signaling Traffic for Multiplex Options 3, 5, 7, 9, 11, 13, and 15 (Part 1 of 2)**

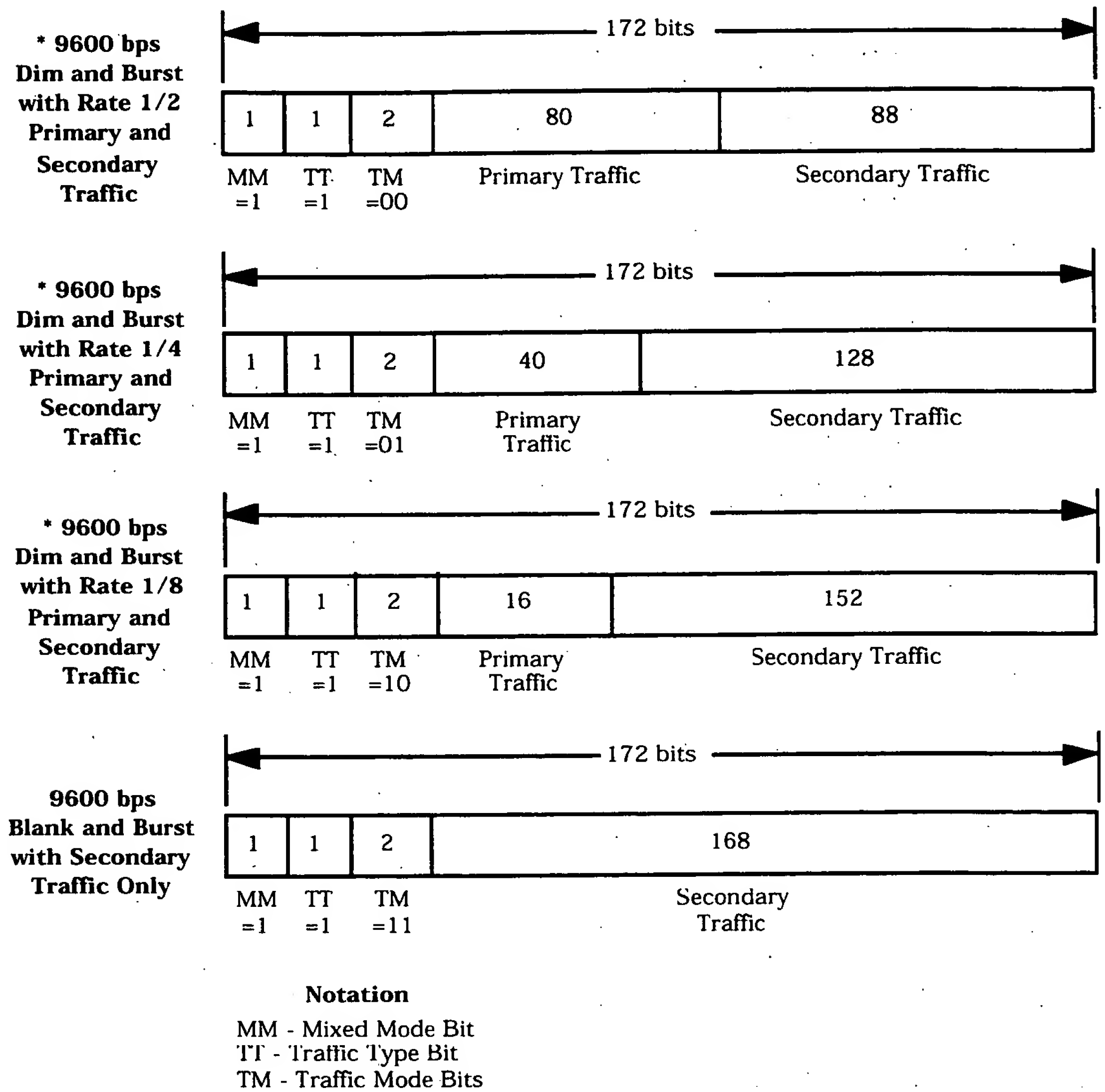



Note: All formats are applicable to the fundamental data block; supplemental data blocks support only the "9600 bps Primary Traffic Only" format.

**Figure 7.1.3.5.14.1-1. Information Bits for Primary Traffic and Signaling Traffic for Multiplex Options 3, 5, 7, 9, 11, 13, and 15 (Part 2 of 2)**

7.1.3.5.14.2 Secondary Traffic with Multiplex Options 3, 5, 7, 9, 11, 13, and 15

If the base station supports Multiplex Option 3, 5, 7, 9, 11, 13, or 15, and the base station supports secondary traffic, the base station shall use the information bit structures described in Table 7.1.3.5.14-2 and in Figure 7.1.3.5.14.2-1.




* Applicable to the fundamental data block only; not permitted in the supplemental data blocks.

**Figure 7.1.3.5.14.2-1. Information Bits for Secondary Traffic for Multiplex Options 3, 5, 7, 9, 11, 13, and 15**

7.1.3.5.14.3 Use of Various Information Bit Formats for Multiplex Options 3, 5, 7, 9, 11, 13, and 15

When neither primary traffic nor secondary traffic is available, the base station shall not transmit the supplemental data blocks. If signaling traffic is available, it shall be transmitted in the fundamental data block using only the blank-and-burst format. When not transmitting signaling traffic, the base station shall transmit null Traffic Channel data in the fundamental data block (see 7.1.3.5.14.5).

When primary traffic is available and secondary traffic is not available, the base station may transmit the fundamental data block, the supplemental data blocks, or both. For the fundamental data block, the base station shall use the information formats specified in 7.1.3.5.14.1. If signaling traffic is also available, the base station should use the dim-and-burst information formats specified in 7.1.3.5.14.1 for signaling traffic in the fundamental data block. When transmitting primary traffic in the supplemental data blocks, the base station shall use the information bit structures specified in 7.1.3.5.14.1 for 9600 bps with primary traffic only.

When primary traffic is not available and secondary traffic is available, the base station may transmit the fundamental data block, the supplemental data blocks, or both. For the fundamental data block, the base station shall use the information formats specified in 7.1.3.5.14.2 to transmit secondary traffic. If signaling traffic is also available, the base station shall use the blank-and-burst format specified in 7.1.3.5.14.1 for signaling traffic in the fundamental data block. When transmitting secondary traffic in the supplemental data blocks, the base station shall use the information bit structures specified in 7.1.3.5.14.2 with secondary traffic only.

When both primary traffic and secondary traffic are available, the base station may transmit the primary traffic in the fundamental data block, the supplemental data blocks, or both. The base station may transmit the secondary traffic in the fundamental data block sharing the block with the primary traffic, in the supplemental data blocks, or both. The base station shall use the information formats specified in 7.1.3.5.14.1 and 7.1.3.5.14.2 for the fundamental data block and supplemental data blocks. When signaling traffic is also available, the base station should use the dim-and-burst information formats specified in 7.1.3.5.14.1 for signaling traffic in the fundamental data block.

7.1.3.5.14.4 Control of Service Options for Multiplex Options 3, 5, 7, 9, 11, 13, and 15

Multiplex Options 3, 5, 7, 9, 11, 13, and 15 control the number of bits that the service options supply to the Forward Traffic Channel for a 20 ms frame and the number of supplemental data blocks allowed in each 20 ms time interval.

The base station shall use the following rules on the fundamental data block when primary traffic is available: If signaling traffic is to be transmitted in a frame, the multiplex option shall either restrict primary traffic to zero bits (for a blank-and-burst block) or to fewer than 171 bits (for a dim-and-burst block) in the fundamental data block. If secondary traffic is to be transmitted in a frame, the multiplex option may restrict primary traffic to fewer than 171 bits, but shall allow primary traffic at least 16 bits in the fundamental data block. In

all other cases, the multiplex option shall allow primary traffic either 16, 40, 80, or 171 bits for the fundamental data block.

The base station may transmit 171 bits of primary traffic or 168 bits of secondary traffic in a supplemental data block.

7.1.3.5.14.5 Null Traffic Channel Data

Null Traffic Channel data shall consist of frames with only fundamental data block which contains primary traffic only, sent at the lowest negotiated transmission rate, with all primary traffic bits set equal to '1'.

The base station transmits null Traffic Channel data on the Forward Traffic Channel when there is no primary, no secondary, and no signaling traffic available. Null Traffic Channel data serves as a "keep-alive" operation so that the mobile station can maintain connectivity with the base station.

7.1.3.5.15 Multiplex Options 4, 6, 8, 10, 12, 14, and 16 Information

Multiplex Options 4, 6, 8, 10, 12, 14, and 16 apply to Rate Set 2. Multiplex Option 2n, n = 2 to 8, provides one fundamental data block and up to n - 1 supplemental data blocks to the Forward Traffic Channel per 20 ms, as shown in Table 7.1.3.5.15-1.

**Table 7.1.3.5.15-1. Number of Data Blocks Provided by Multiplex Options 4, 6, 8, 10, 12, 14, and 16**

| Multiplex Option | Number of Fundamental Data Blocks | Maximum Number of Supplemental Data Blocks |
|---|---|---|
| 4 | 1 | 1 |
| 6 | 1 | 2 |
| 8 | 1 | 3 |
| 10 | 1 | 4 |
| 12 | 1 | 5 |
| 14 | 1 | 6 |
| 16 | 1 | 7 |

The number of data blocks provided shall not exceed the number allowed for the multiplex option.

Multiplex Options 4, 6, 8, 10, 12, 14, and 16 provide for the transmission of primary traffic, secondary traffic, and signaling traffic.

The base station shall transmit signaling traffic, when available, only in the fundamental data block via the blank-and-burst format with the signaling traffic using all of the fundamental data block, via the dim-and-burst format with the primary traffic and signaling traffic sharing the fundamental data block, or via the dim-and-burst format with the primary traffic, secondary traffic, and signaling traffic sharing the same fundamental data block.

Primary traffic and secondary traffic may be transmitted in the fundamental data block or in supplemental data blocks. When primary traffic is available, secondary traffic may be transmitted in the fundamental data block via the dim-and-burst format with the primary traffic and secondary traffic sharing the fundamental data block. When primary traffic is not available, secondary traffic may be transmitted in the fundamental data block via the blank-and-burst format with the secondary traffic using all of the fundamental data block. When primary traffic is transmitted in a supplemental data block, the base station shall use the 14400 bps primary traffic only format specified in 7.1.3.5.15.1. When secondary traffic is transmitted in a supplemental data block, the blank-and-burst format shall be used with the secondary traffic using all of the supplemental data block. Primary and secondary traffic shall not share a supplemental data block.

The information bit structures for primary and signaling traffic for Multiplex Options 4, 6, 8, 10, 12, 14, and 16 are specified in 7.1.3.5.15.1; the information bit structures for secondary traffic are specified in 7.1.3.5.15.2. Table 7.1.3.5.15-2 shows the information bit structures supported by Multiplex Options 4, 6, 8, 10, 12, 14, and 16.

The base station may support Multiplex Options 4, 6, 8, 10, 12, 14, and 16. If the base station supports Multiplex Option 4, 6, 8, 10, 12, 14, or 16, the base station shall support the transmission of primary traffic and signaling traffic, using the information bit structures specified in 7.1.3.5.15.1. The base station may support secondary traffic; and, if so, the base station shall also use the information bit structures specified in 7.1.3.5.15.2.

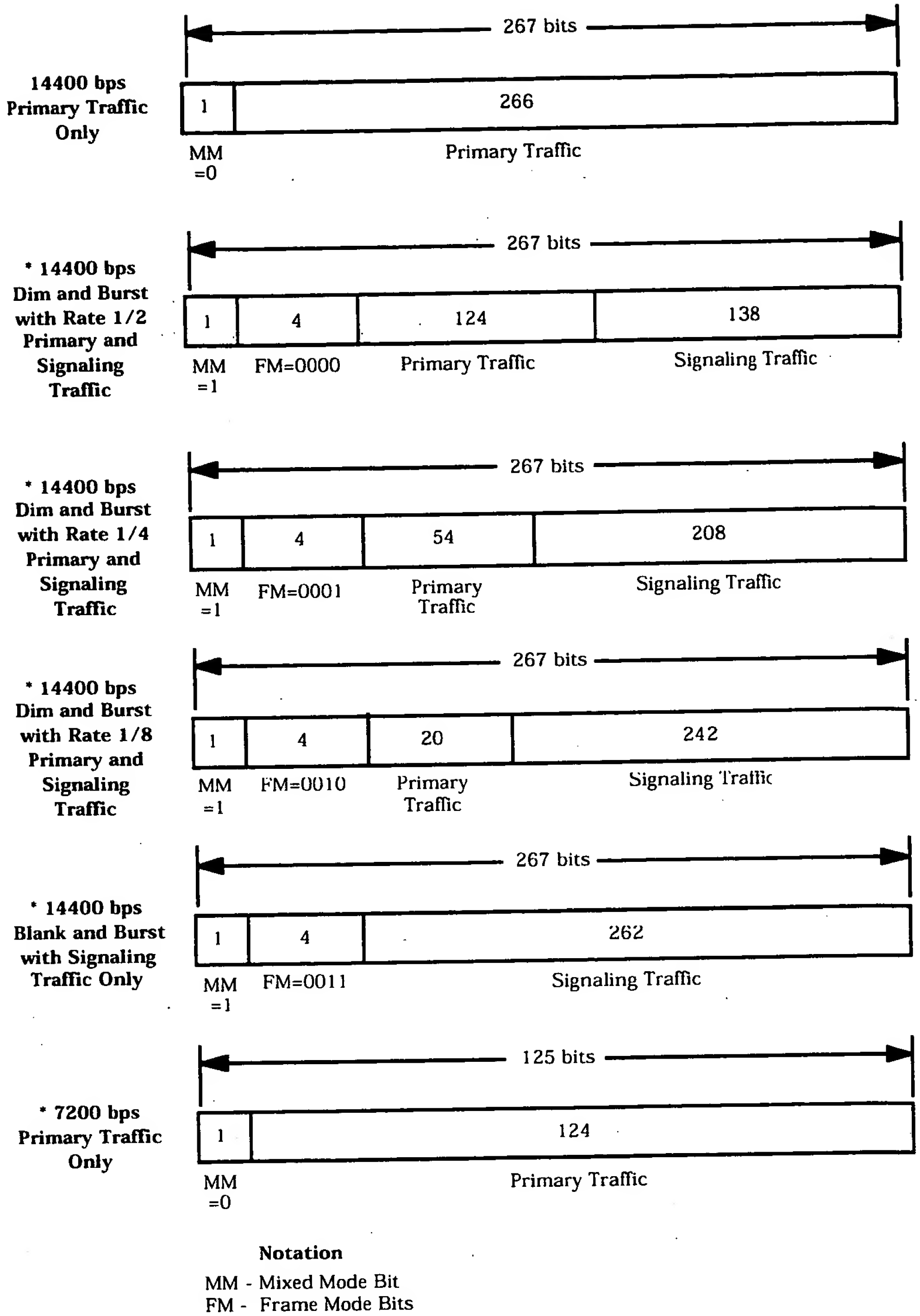
**Table 7.1.3.5.15-2. Forward Traffic Channel Information Bits for Multiplex Options 4, 6, 8, 10, 12, 14, and 16**

| Transmit Rate (bits/sec) | Format Bits: Mixed Mode (MM) | Format Bits: Frame Mode (FM) | Primary Traffic (bits/block) | Signaling Traffic (bits/block) | Secondary Traffic (bits/block) | Permitted in Supplemental Data Blocks |
|---|---|---|---|---|---|---|
| | '0' | – | 266 | 0 | 0 | Y |
| | '1' | '0000' | 124 | 138 | 0 | N |
| | '1' | '0001' | 54 | 208 | 0 | N |
| | '1' | '0010' | 20 | 242 | 0 | N |
| 14400 | '1' | '0011' | 0 | 262 | 0 | N |
| * | '1' | '0100' | 124 | 0 | 138 | N |
| * | '1' | '0101' | 54 | 0 | 208 | N |
| * | '1' | '0110' | 20 | 0 | 242 | N |
| * | '1' | '0111' | 0 | 0 | 262 | Y |
| * | '1' | '1000' | 20 | 222 | 20 | N |
| | '0' | – | 124 | 0 | 0 | N |
| | '1' | '000' | 54 | 67 | 0 | N |
| | '1' | '001' | 20 | 101 | 0 | N |
| 7200 | '1' | '010' | 0 | 121 | 0 | N |
| * | '1' | '011' | 54 | 0 | 67 | N |
| * | '1' | '100' | 20 | 0 | 101 | N |
| * | '1' | '101' | 0 | 0 | 121 | N |
| * | '1' | '110' | 20 | 81 | 20 | N |
| | '0' | – | 54 | 0 | 0 | N |
| | '1' | '00' | 20 | 32 | 0 | N |
| 3600 | '1' | '01' | 0 | 52 | 0 | N |
| * | '1' | '10' | 20 | 0 | 32 | N |
| * | '1' | '11' | 0 | 0 | 52 | N |
| 1800 | '0' | – | 20 | 0 | 0 | N |
| * | '1' | – | 0 | 0 | 20 | N |

Note: Base station support of the secondary traffic structures, marked with *, is optional.

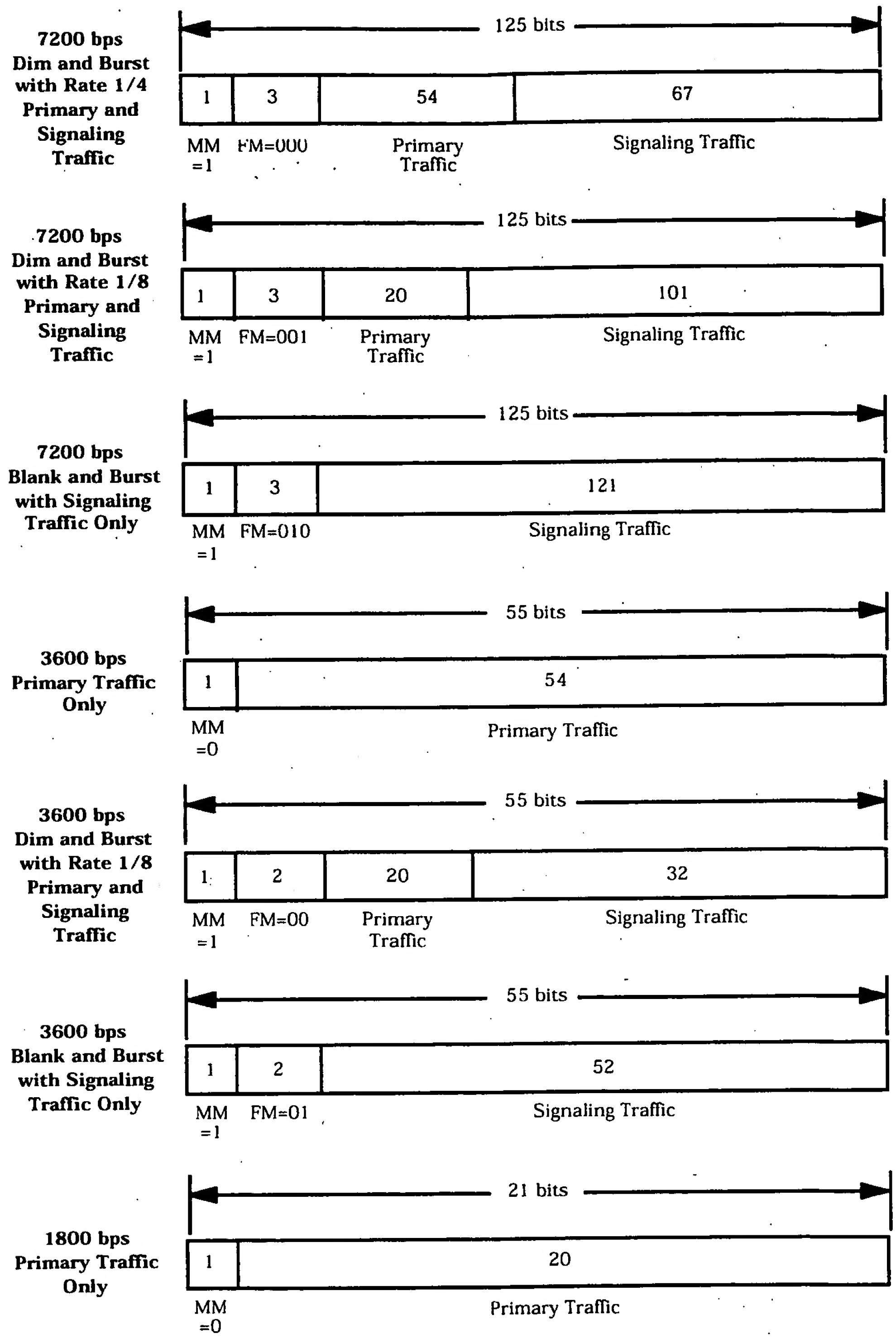
7.1.3.5.15.1 Primary and Signaling Traffic with Multiplex Options 4, 6, 8, 10, 12, 14, and 16

If the base station supports Multiplex Option 4, 6, 8, 10, 12, 14, or 16, the base station shall use the information bit structures described in Table 7.1.3.5.15-2 and in Figure 7.1.3.5.15.1-1.




* Applicable to the fundamental data block only; not permitted in the supplemental data blocks.

**Figure 7.1.3.5.15.1-1. Information Bits for Primary Traffic and Signaling Traffic for Multiplex Options 4, 6, 8, 10, 12, 14, and 16 (Part 1 of 2)**




Note: All formats are applicable to the fundamental data block; supplemental data blocks support only the "14400 bps Primary Traffic Only" format.

**Figure 7.1.3.5.15.1-1. Information Bits for Primary Traffic and Signaling Traffic for Multiplex Options 4, 6, 8, 10, 12, 14, and 16 (Part 2 of 2)**

### 7.1.3.5.15.2 Secondary Traffic with Multiplex Options 4, 6, 8, 10, 12, 14, and 16

If the base station supports Multiplex Option 2, 4, 6, 8, 10, 12, 14, or 16, and the base station supports secondary traffic, the base station shall use the information bit structures described in Table 7.1.3.5.15-2 and in Figure 7.1.3.5.15.2-1.

*** 14400 bps Dim and Burst with Rate 1/2 Primary and Secondary Traffic**

267 bits

| 1 | 4 | 124 | 138 |
|---|---|---|---|
| MM =1 | FM=0100 | Primary Traffic | Secondary Traffic |

*** 14400 bps Dim and Burst with Rate 1/4 Primary and Secondary Traffic**

267 bits

| 1 | 4 | 54 | 208 |
|---|---|---|---|
| MM =1 | FM=0101 | Primary Traffic | Secondary Traffic |

*** 14400 bps Dim and Burst with Rate 1/8 Primary and Secondary Traffic**

267 bits

| 1 | 4 | 20 | 242 |
|---|---|---|---|
| MM =1 | FM=0110 | Primary Traffic | Secondary Traffic |

**14400 bps Blank and Burst with Secondary Traffic Only**

267 bits

| 1 | 4 | 262 |
|---|---|---|
| MM =1 | FM=0111 | Secondary Traffic |

*** 14400 bps Dim and Burst with Rate 1/8 Primary, Secondary, and Signaling Traffic**

267 bits

| 1 | 4 | 20 | 222 | 20 |
|---|---|---|---|---|
| MM =1 | FM=1000 | Primary Traffic | Signaling Traffic | Secondary Traffic |

*** 7200 bps Dim and Burst with Rate 1/4 Primary and Secondary Traffic**

125 bits

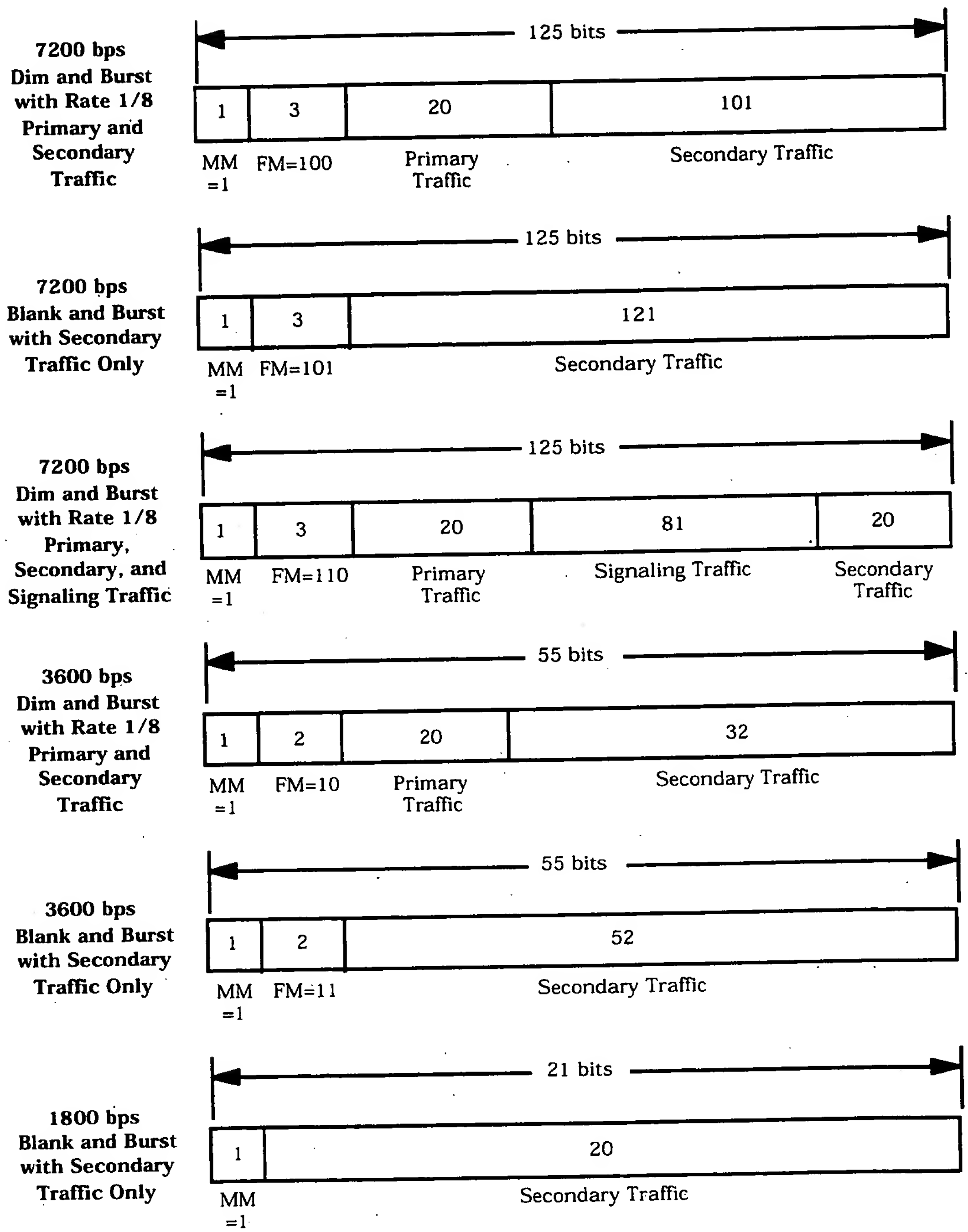
| 1 | 3 | 54 | 67 |
|---|---|---|---|
| MM =1 | FM=011 | Primary Traffic | Secondary Traffic |

**Notation**

MM - Mixed Mode Bit
FM - Frame Mode Bits

* Applicable to the fundamental data block only; not permitted in the supplemental data blocks.

**Figure 7.1.3.5.15.2-1. Information Bits for Secondary Traffic for Multiplex Options 4, 6, 8, 10, 12, 14, and 16 (Part 1 of 2)**




Note: All formats are applicable to the fundamental data block; supplemental data blocks support only the "14400 bps Primary Traffic Only" and the "14400 bps blank-and-burst with secondary traffic only" formats.

**Figure 7.1.3.5.15.2-1. Information Bits for Secondary Traffic for Multiplex Options 4, 6, 8, 10, 12, 14, and 16 (Part 2 of 2)**

#### 7.1.3.5.15.3 Use of Various Information Bit Formats for Multiplex Options 4, 6, 8, 10, 12, 14, and 16

When neither primary traffic nor secondary traffic is available, the base station shall not transmit the supplemental data blocks. If signaling traffic is available, it shall be transmitted in the fundamental data block using only the blank-and-burst format. When not transmitting signaling traffic, the base station shall transmit null Traffic Channel data in the fundamental data block (see 7.1.3.5.15.5).

When primary traffic is available and secondary traffic is not available, the base station may transmit the fundamental data block, the supplemental data blocks, or both. For the fundamental data block, the base station shall use the information formats specified in 7.1.3.5.15.1. If signaling traffic is also available, the base station should use the dim-and-burst information formats specified in 7.1.3.5.15.1 for signaling traffic in the fundamental data block. When transmitting primary traffic in the supplemental data blocks, the base station shall use the 14400 bps primary traffic only format specified in 7.1.3.5.15.1.

When primary traffic is not available and secondary traffic is available, the base station may transmit the fundamental data block, the supplemental data blocks, or both. For the fundamental data block, the base station shall use the information formats specified in 7.1.3.5.15.2 to transmit secondary traffic. If signaling traffic is also available, the base station shall use the blank-and-burst format specified in 7.1.3.5.15.1 for signaling traffic in the fundamental data block. When transmitting secondary traffic in the supplemental data blocks, the base station shall use the "14400 bps blank-and-burst with secondary traffic only" format specified in 7.1.3.5.15.2.

When both primary traffic and secondary traffic are available, the base station may transmit the primary traffic in the fundamental data block, the supplemental data blocks, or both. The base station may transmit the secondary traffic in the fundamental data block sharing the block with the primary traffic, in the supplemental data blocks, or both. The base station shall use the information formats specified in 7.1.3.5.15.1 and 7.1.3.5.15.2 for the fundamental data block and supplemental data blocks. When signaling traffic is also available, the base station should use the dim-and-burst information formats specified in 7.1.3.5.15.1 for signaling traffic in the fundamental data block.

#### 7.1.3.5.15.4 Control of Service Options for Multiplex Options 4, 6, 8, 10, 12, 14, and 16

Multiplex Options 4, 6, 8, 10, 12, 14, and 16 control the number of bits that the service options supply to the Forward Traffic Channel for a 20 ms frame and the number of supplemental data blocks allowed in each 20 ms time interval.

The base station shall use the following rules on the fundamental data block when primary traffic is available: If signaling traffic is to be transmitted in a frame, the multiplex option shall either restrict primary traffic to zero bits (for a blank-and-burst block) or to fewer than 266 bits (for a dim-and-burst block) in the fundamental data block. If secondary traffic is to be transmitted in a frame, the multiplex option may restrict primary traffic to fewer than 266 bits, but shall allow primary traffic at least 20 bits in the fundamental data block. In all other cases, the multiplex option shall allow primary traffic either 20, 54, 124, or 266 bits for the fundamental data block.

The base station may transmit 266 bits of primary traffic or 262 bits of secondary traffic in a supplemental data block.

7.1.3.5.15.5 Null Traffic Channel Data

Null Traffic Channel data shall consist of frames with only fundamental data block which contains primary traffic only, sent at the lowest negotiated transmission rate, with all primary traffic bits set equal to '1'.

The base station transmits null Traffic Channel data on the Forward Traffic Channel when there is no primary, no secondary, and no signaling traffic available. Null Traffic Channel data serves as a "keep-alive" operation so that the mobile station can maintain connectivity with the base station.

7.1.4 Limitations on Emissions

7.1.4.1 Conducted Spurious Emissions

7.1.4.1.1 Cellular Band

When transmitting in the cellular or PCS band, the spurious emissions between 864 and 899 MHz shall be as shown in Table 7.1.4.1.1-1. The spurious emission limits are required to be met up to 5 MHz outside of the allocation.

**Table 7.1.4.1.1-1. Band Class 0 Transmitter Spurious Emission Limits**

| For $\lvert\Delta f\rvert$ Greater than | Emission Limit |
|---|---|
| 750 kHz | -45 dBc / 30 kHz |
| 1.98 MHz | -60 dBc / 30 kHz; $P_{out} \geq 33$ dBm<br>-27 dBm / 30 kHz; 28 dBm $\leq P_{out} < 33$ dBm<br>-55 dBc / 30 kHz; $P_{out} < 28$ dBm |
| 3.125 MHz | -13 dBm / 100 kHz |

Note: All frequencies in the measurement bandwidth shall satisfy the restrictions on $\lvert\Delta f\rvert$, where $\Delta f$ = center frequency - closer measurement edge frequency and $P_{out}$ is the average transmitter power. The -13 dBm / 100 kHz emission limit is based on ITU Category A emission limits.

Current FCC rules shall also apply.

7.1.4.1.2 PCS Band

When transmitting in the cellular or PCS band, the spurious emissions between 1925 and 1995 MHz shall be as shown in Table 7.1.4.1.2-1. The spurious emission limits are required to be met up to 5 MHz outside of the allocation.

**Table 7.1.4.1.2-1. Band Class 1 Transmitter Spurious Emission Limits**

| For $\lvert\Delta f\rvert$ Greater than | Emission Limit |
|---|---|
| 885 kHz | -45 dBc / 30 kHz |
| 1.98 MHz | -55 dBc / 30 kHz; $P_{out} \geq$ 33 dBm<br>-22 dBm / 30 kHz; 28 dBm $\leq P_{out} <$ 33 dBm<br>-50 dBc / 30 kHz; $P_{out} <$ 28 dBm |
| 2.25 MHz | -13 dBm / 1 MHz |

Note: All frequencies in the measurement bandwidth shall satisfy the restrictions on $\lvert\Delta f\rvert$, where $\Delta f$ = center frequency - closer measurement edge frequency and $P_{out}$ is the average transmitter power. The -13 dBm / 1 MHz emission limit is based on FCC rules which are more stringent than ITU Category A emission limits.

Current FCC rules shall also apply.

7.1.4.2 Radiated Spurious Emissions

Radiated spurious emissions (from sources other than the antenna connector) shall meet the levels corresponding to the conducted spurious emissions requirements listed in 7.1.4.1.

7.1.4.3 Intermodulation Products

Radiated products from co-located transmitters shall not exceed FCC spurious and harmonic level requirements that would apply to any of the transmitters operated separately.

7.1.5 Synchronization, Timing, and Phase

7.1.5.1 Timing Reference Source

Each base station shall use a time base reference from which all time critical CDMA transmission components, including pilot PN sequences, frames, and Walsh functions, shall be derived. The time base reference shall be time-aligned to CDMA System Time, as described in 1.2. Reliable external means should be provided at each base station to synchronize each base station's time base reference to CDMA System Time. Each base station should use a frequency reference of sufficient accuracy to maintain time alignment to CDMA System Time.

In the event that the external source of System Time is lost[7], the system shall maintain the base station transmit time within the tolerance specified in 7.1.5.2 for a period of time specified in TIA/EIA-97-B for Band Class 0 and ANSI J-STD-019 for Band Class 1.

#### 7.1.5.2 Base Station Transmission Time

When operating in Band Class 0, the base station shall meet the requirements in Section 10.3.1.1 of TIA/EIA-97-B. When operating in Band Class 1, the base station shall meet the requirements in Section 4.3.1.1 of ANSI J-STD-019.

Time measurements are made at the base station antenna connector. If a base station has multiple radiating antenna connectors for the same CDMA channel, time measurements are made at the antenna connector having the earliest radiated signal.

The rate of change for timing corrections shall not exceed 1/8 PN chip (101.725 ns) per 200 ms.

#### 7.1.5.3 Pilot to Walsh Cover Time Tolerance

When operating in Band Class 0, the base station shall meet the requirements in Section 10.3.1.2 of TIA/EIA-97-B. When operating in Band Class 1, the base station shall meet the requirements in Section 4.3.1.2 of ANSI J-STD-019.

#### 7.1.5.4 Pilot to Walsh Cover Phase Tolerance

A base station operating in Band Class 1 shall use the requirements in this Standard in lieu of the those given in ANSI J-STD-019.

The phase difference between the RF carrier of the Pilot Channel and the RF carrier of any other code channels on the same forward CDMA Channel emitted by the base station shall not exceed 0.15 radians and should not exceed 0.05 radians.

### 7.1.6 Transmitter Performance Requirements

System performance is predicated on transmitters meeting the requirements set forth in TIA/EIA-97-B for Band Class 0 and ANSI J-STD-019 for Band Class 1.

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[7] These guidelines on time keeping requirements reflect the fact that the amount of time error between base stations that can be tolerated in a CDMA network is not a hard limit. Each mobile station can search an ever increasing time window as directed by the base stations. However, increasing this window gradually degrades performance since wider windows require a longer time for the mobile stations to search out and locate the various arrivals from all base stations that may be in view. An eventual limit on time errors occurs since pilot addresses are derived as 64 chip time shifts of a length 32768 chip sequence.. In a very extreme case where the maximum number of 512 sequences were assigned to base stations, these address sequences would be 64 chips apart. In this situation it is possible that large time errors between base station transmissions would be confused with path-delayed arrivals from a given base station.

## 7.2 Receiver

### 7.2.1 Frequency Parameters

#### 7.2.1.1 Channel Spacing and Designation

Channel spacing and designations for the base station reception shall be as specified in 6.1.1.1.

### 7.2.2 Demodulation Characteristics

The base station demodulation process shall perform complementary operations to the mobile station modulation process on the Reverse CDMA Channel (see 6.1.3).

The base station receiver shall support the closed loop power control sub-channel as specified in 7.1.3.1.8.

The Reverse Traffic Channel frame is described in 6.1.3.3.2. A base station may implement offset Reverse Traffic Channel frames as described in 6.1.3.3.1.

### 7.2.3 Limitations on Emissions

When operating in Band Class 0, the base station shall meet the requirements in Section 9.5.1 of TIA/EIA-97-B. When operating in Band Class 1, the base station shall meet the requirements in Section 3.5.1 of ANSI J-STD-019.

### 7.2.4 Receiver Performance Requirements

System performance is predicated on receivers meeting the requirements set forth in TIA/EIA-97-B for Band Class 0 and ANSI J-STD-018 for Band Class 1.

## 7.3 Security and Identification

### 7.3.1 Authentication

The base station may be equipped with a database that includes unique mobile station authentication keys, shared secret data, or both for each registered mobile station in the system. This database is used for authentication of mobile stations that are equipped for authentication operation.

If the base station supports mobile station authentication, it shall provide the following capabilities: The base station shall send and receive authentication messages and perform the authentication calculations described in 6.3.12.1. If the base station supports 800 MHz analog operation, the base station should set the RAND parameter of the *Access Parameters Message* to the same value transmitted on the forward analog control channel (see 2.3.12.1.2).

### 7.3.2 Encryption

If the base station supports mobile station authentication (see 7.3.1), it may also support message encryption by providing the capability to send encryption control messages and the ability to perform the operations of encryption and decryption as specified in 6.3.12.2.

### 7.3.3 Voice Privacy

If the base station supports mobile station authentication (see 7.3.1), it may also support voice privacy using the private long code mask, as specified in 6.3.12.3.

## 7.4 Supervision

### 7.4.1 Access Channel

The base station shall continually monitor each active Access Channel. The base station should provide control in cases of overload by using the *Access Parameters Message*.

The base station shall check the CRC of all received Access Channel messages (see 6.7.1.2.2). The base station shall consider any message with a CRC that checks to be valid. The base station shall ignore any message which is not valid.

### 7.4.2 Reverse Traffic Channel

The base station shall continually monitor each active Reverse Traffic Channel to determine if the call is active. If the base station detects that the call is no longer active, the base station shall declare loss of Reverse Traffic Channel continuity (see 7.6.4).

The base station shall check the CRC of all received Reverse Traffic Channel messages (see 6.7.2.2.2). The base station shall consider any message with a CRC that checks to be valid. The base station shall ignore any message which is not valid.

## 7.5 Malfunction Detection

Reserved.

## 7.6 Call Processing

This section describes base station call processing. It contains frequent references to the messages that flow between the base station and the mobile station. While reading this section, it may be helpful to refer to the message formats (see 6.7 and 7.7), and to the call flow examples (see Annex B).

The values for the time and numeric constants used in this section (e.g., $T_{1b}$ and $N_{4m}$) are specified in Annex D.

Base station call processing consists of the following types of processing:

- *Pilot and Sync Channel Processing* - During *Pilot and Sync Channel Processing*, the base station transmits the Pilot Channel and Sync Channel which the mobile station uses to acquire and synchronize to the CDMA system while the mobile station is in the *Mobile Station Initialization State*.
- *Paging Channel Processing* - During *Paging Channel Processing*, the base station transmits the Paging Channel which the mobile station monitors to receive messages while the mobile station is in the *Mobile Station Idle State* and the *System Access State*.

- *Access Channel Processing* - During *Access Channel Processing*, the base station monitors the Access Channel to receive messages which the mobile station sends while the mobile station is in the *System Access State*.
- *Traffic Channel Processing* - During *Traffic Channel Processing*, the base station uses the Forward and Reverse Traffic Channels to communicate with the mobile station while the mobile station is in the *Mobile Station Control on the Traffic Channel State*.

### 7.6.1 Pilot and Sync Channel Processing

During *Pilot and Sync Channel Processing*, the base station transmits the Pilot and Sync Channels which the mobile station uses to acquire and synchronize to the CDMA system while the mobile station is in the *Mobile Station Initialization State*.

#### 7.6.1.1 Preferred Set of CDMA Channels

The preferred set of frequency assignments are the CDMA Channels on which the mobile station attempts to acquire the CDMA system (see 6.1.1.1).

The base station shall support at least one member of the preferred set of frequency assignments. The base station may support additional CDMA Channels.

#### 7.6.1.2 Pilot Channel Operation

The Pilot Channel (see 7.1.3.2) is a reference channel which the mobile station uses for acquisition, timing, and as a phase reference for coherent demodulation.

The base station shall continually transmit a Pilot Channel for every CDMA Channel supported by the base station.

#### 7.6.1.3 Sync Channel Operation

The Sync Channel (see 7.1.3.3) provides the mobile station with system configuration and timing information.

The base station shall transmit at most one Sync Channel for each supported CDMA Channel. The base station shall support a Sync Channel on at least one member of the preferred set of frequency assignments that it supports. The base station should support a Sync Channel on every member of the preferred set of frequency assignments that it supports.

If the base station operates in Band Class 0 and supports the Primary CDMA Channel, then the base station shall transmit a Sync Channel on the Primary CDMA Channel.

The base station shall continually send the *Sync Channel Message* on each Sync Channel that the base station transmits.

### 7.6.2 Paging Channel Processing

During *Paging Channel Processing*, the base station transmits the Paging Channel (see 7.1.3.4) which the mobile station monitors to receive messages while the mobile station is in the *Mobile Station Idle State* and the *System Access State*.

The base station may transmit up to seven Paging Channels on each supported CDMA Channel.

For each Paging Channel that the base station transmits, the base station shall continually send valid Paging Channel messages (see 7.7.2), which may include the *Null Message*.

The base station shall not send any message which is not completely contained within two consecutive Paging Channel slots, unless the processing requirements for the message explicitly specify a different size limitation.[8]

### 7.6.2.1 Paging Channel Procedures

#### 7.6.2.1.1 CDMA Channel Determination

To determine the mobile station's assigned CDMA Channel, the base station shall use the hash function specified in 6.6.7.1 with the following inputs:

- IMSI_S based on the IMSI with which the mobile station registered (see 6.3.1)
- Number of CDMA Channels on which the base station transmits Paging Channels.

#### 7.6.2.1.2 Paging Channel Determination

To determine the mobile station's assigned Paging Channel, the base station shall use the hash function specified in 6.6.7.1 with the following inputs:

- IMSI_S based on the IMSI with which the mobile station registered (see 6.3.1)
- Number of Paging Channels which the base station transmits on the mobile station's assigned CDMA Channel.

#### 7.6.2.1.3 Paging Slot Determination

To determine the assigned Paging Channel slots for a mobile station with a given slot cycle index, the base station shall select a number PGSLOT using the hash function specified in 6.6.7.1 with the following inputs:

- IMSI_S based on the IMSI with which the mobile station registered (see 6.3.1)
- Maximum number of Paging Channel slots (2048).

The assigned Paging Channel slots for the mobile station are those slots for which

$$(\lfloor t/4 \rfloor - \mathrm{PGSLOT}) \bmod (16 \times T) = 0,$$

where t is the System Time in frames, and T is the slot cycle length in units of 1.28 seconds given by

$$T = 2^i,$$

where i is the slot cycle index.

[8] See, for example, TIA/EIA/IS-637 which specifies processing requirements for the *Data Burst Message*.

When the base station is able to determine that the mobile station is operating in the slotted mode and is able to determine the mobile station's preferred slot cycle index, the base station uses for the mobile station's slot cycle index the smaller of the mobile station's preferred slot cycle index and the maximum slot cycle index.

When the base station is not able to determine whether the mobile station is operating in the slotted mode, or the base station is not able to determine the mobile station's preferred slot cycle index, the base station uses for the mobile station's slot cycle index the smaller of the maximum slot cycle index and 1.

7.6.2.1.4 Message Transmission and Acknowledgment Procedures

The Paging Channel acknowledgment procedures facilitate the reliable exchange of messages between the base station and the mobile station on the Paging Channel and Access Channel (see 7.6.3.1.1). The base station uses the fields ACK_TYPE (acknowledgment address type), ACK_SEQ (acknowledgment sequence number), MSG_SEQ (message sequence number), ACK_REQ (acknowledgment required), and VALID_ACK (valid acknowledgment) to support this mechanism. These fields are referred to as layer 2 fields, and the acknowledgment procedures are referred to as layer 2 procedures. All other message fields and the processing thereof are referred to as pertaining to layer 3. (See Annex C for further discussion of layering.)

Paging Channel messages other than the *General Page Message* can be addressed, by means of the ADDRESS field, to either a specific mobile station, a specific IMSI, or a specific TMSI. The *General Page Message* can only be addressed to a specific IMSI or TMSI.

The base station shall set the ACK_SEQ and VALID_ACK fields of all Paging Channel messages as specified in 7.6.3.1.1.

For mobile-station-directed messages (see 7.6.2.3), the base station shall use the message address types specified in Table 7.7.2.3.1-1. When paging the mobile station, the base station shall use the *General Page Message.*

The base station shall maintain independent message numbering sequences (MSG_SEQ) on the Paging Channel for each message address type (i.e., for each value of the ADDR_TYPE field that is used) and for each address. The *General Page Message* with PAGE_CLASS equal to '00' or '01' shall be considered to be addressed by IMSI (as if ADDR_TYPE were equal to '010'); the records of the *General Page Message* with PAGE_CLASS equal to '10' shall be considered to be addressed by TMSI (as if ADDR_TYPE were equal to '011' or '100').

For each message address type, separate message numbering sequences shall be maintained for messages requiring acknowledgment and for messages not requiring acknowledgment. Each base station may maintain the sequence numbers independently of other base stations. For each new message sent to a message address, the base station shall increment the appropriate MSG_SEQ value, modulo 8.

The base station shall wait at least $T_{4m}$ seconds after transmitting a MSG_SEQ number in a message sent to a message address before using the same MSG_SEQ number in a different message (see Figure 7.6.2.1.4-1).

The base station may send a message several times to increase the probability of message reception. The base station shall complete all retransmissions of the same message within $T_{4m}$ seconds after the first transmission, as shown in Figure 7.6.2.1.4-1. If the base station sends a message with the same contents more than $T_{4m}$ seconds after the first transmission, it shall use a different message sequence number.

A message received on the Access Channel contains an acknowledgment if the VALID_ACK field is '1'. When the base station receives a message with VALID_ACK set to '1', it shall use the received ACK_TYPE, ACK_SEQ and mobile station identification fields to determine the message that is being acknowledged. The base station should not retransmit a message requiring acknowledgment after it has received an acknowledgment of the message.

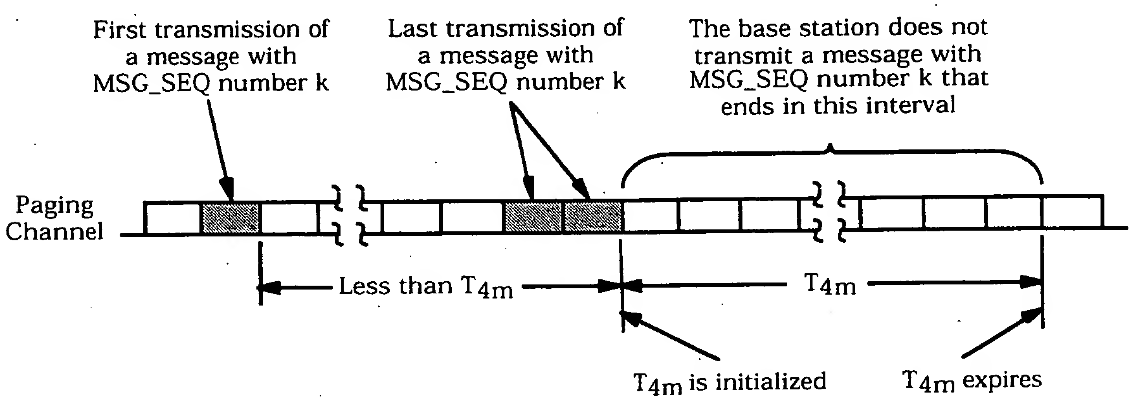


**Figure 7.6.2.1.4-1. MSG_SEQ Reuse**

### 7.6.2.1.5 Paging Channel Address Composition

If the Paging Channel Messages are directed to the mobile station using IMSI addressing, the base station should use the IMSI associated with the last mobile station registration.

#### 7.6.2.1.5.1 Paging Channel Address Composition for Other than the General Page Message

When the base station sends Paging Channel messages directed to a specific mobile station, the base station shall use the mobile station ESN, the IMSI with which the mobile station registered, or TMSI to address the mobile station.

If the message is addressed to the mobile station's IMSI_S or ESN, the base station shall set the addressing fields as described in 7.7.2.3.1.

If the message is addressed to the mobile station's IMSI, the base station shall set the addressing fields as described in 7.7.2.3.1 and shall set the IMSI_CLASS, IMSI_CLASS_0_TYPE, and IMSI_CLASS_1_TYPE fields as follows:

- The base station may address the mobile station with an IMSI_CLASS equal to '0' and IMSI_CLASS_0_TYPE equal to '00' if all the following conditions are true:
  - The mobile station's IMSI is a class 0 IMSI,

- The IMSI_11_12 sent in the *Extended System Parameters Message* by the base station (see 7.7.2.3.2.13) is set to '1111111' or is equal to the IMSI_11_12 assigned to the mobile station, and
- The MCC sent in the *Extended System Parameters Message* by the base station is set to '1111111111' or is equal to MCC assigned to the mobile station.

- The base station may address the mobile station with an IMSI_CLASS equal to '0' and IMSI_CLASS_0_TYPE equal to '01' if all the following conditions are true:
  - The mobile station's IMSI is a class 0 IMSI, and
  - The MCC assigned to the mobile station is equal to the MCC sent in the *Extended System Parameters Message* by the base station.
- The base station may address the mobile station with an IMSI_CLASS equal to '0' and IMSI_CLASS_0_TYPE equal to '10' if all the following conditions are true:
  - The mobile station's IMSI is a class 0 IMSI, and
  - The IMSI_11_12 assigned to the mobile station is equal to the IMSI_11_12 sent in the *Extended System Parameters Message* by the base station.
- The base station may address the mobile station with an IMSI_CLASS equal to '0' and IMSI_CLASS_0_TYPE equal to '11' if the following condition is true:
  - The mobile station's IMSI is a class 0 IMSI.
- The base station may address the mobile station with an IMSI_CLASS equal to '1' and IMSI_CLASS_1_TYPE equal to '0' if all the following conditions are true:
  - The mobile station's IMSI is a class 1 IMSI,
  - The MCC assigned to the mobile station is equal to the MCC sent in the *Extended System Parameters Message* by the base station.
- The base station may address the mobile station with an IMSI_CLASS equal to '1' and IMSI_CLASS_1_TYPE equal to '1' if the following condition is true:
  - The mobile station's IMSI is a class 1 IMSI.

If the message is addressed to the mobile station's TMSI, the base station shall set the addressing fields as described in 7.7.2.3.1.

7.6.2.1.5.2 Paging Channel Address Composition for the General Page Message

When sending a *General Page Message* (see 7.7.2.3.2.17) to the mobile station, the base station shall use the following procedures:

- The base station may page the mobile station using a page record with PAGE_CLASS equal to '00' and PAGE_SUBCLASS equal to '00' if all the following conditions are met:
  - The mobile station's IMSI is a class 0 IMSI,

  - The IMSI_11_12 sent in the *Extended System Parameters Message* by the base station (see 7.7.2.3.2.13) is set to '1111111' or is equal to IMSI_11_12 assigned to the mobile station, and
  - The MCC sent in the *Extended System Parameters Message* by the base station is set to '1111111111' or is equal to MCC assigned to the mobile station.
- The base station may page the mobile station using a page record with PAGE_CLASS equal to '00' and PAGE_SUBCLASS equal to '01' if all the following conditions are met:
  - The mobile station's IMSI is a class 0 IMSI, and
  - The MCC assigned to the mobile station is equal to the MCC sent in the *Extended System Parameters Message* by the base station.
- The base station may page the mobile station using a page record with PAGE_CLASS equal to '00' and PAGE_SUBCLASS equal to '10' if all the following conditions are met:
  - The mobile station's IMSI is a class 0 IMSI, and
  - The IMSI_11_12 assigned to the mobile station is equal to the IMSI_11_12 sent in the *Extended System Parameters Message* by the base station.
- The base station may page the mobile station using a page record with PAGE_CLASS equal to '00' and PAGE_SUBCLASS equal to '11' if the following condition is met:
  - The mobile station's IMSI is a class 0 IMSI.
- The base station may page the mobile station using a page record with PAGE_CLASS equal to '01' and PAGE_SUBCLASS equal to '00' if all the following conditions are met:
  - The mobile station's IMSI is a class 1 IMSI, and
  - The MCC assigned to the mobile station is equal to the MCC sent in the *Extended System Parameters Message* by the base station.
- The base station may page the mobile station using a page record with PAGE_CLASS equal to '01' and PAGE_SUBCLASS equal to '01' if the following condition is met:
  - The mobile station's IMSI is a class 1 IMSI.
- The base station may announce the presence of broadcast *Data Burst Messages* on the Paging Channel by paging, using a broadcast address with PAGE_CLASS equal to '11' and PAGE_SUBCLASS equal to '00'.
- The base station may page the mobile station using a page record with PAGE_CLASS equal to '10' and PAGE_SUBCLASS equal to '00' if the following condition is met:
  - The mobile station has been assigned a TMSI within the same TMSI zone as the base station.

- The base station may page the mobile station using a page record with PAGE_CLASS equal to '10' and PAGE_SUBCLASS equal to '01' if the following conditions are met:
  - The mobile station has been assigned a TMSI within the same TMSI zone as the base station, and
  - The most significant octet of TMSI_CODE is equal to '00000000'.
- The base station may page the mobile station using a page record with PAGE_CLASS equal to '10' and PAGE_SUBCLASS equal to '10' if the following conditions are met:
  - The mobile station has been assigned a TMSI within the same TMSI zone as the base station, and
  - The two most significant octets of TMSI_CODE are both equal to '00000000'.
- If the base station pages the mobile station using the TMSI assigned to the mobile station and the TMSI was assigned in a different TMSI zone than that being sent by the base station in the *Extended System Parameters Message*, the base station shall use a page record with PAGE_CLASS equal to '10' and PAGE_SUBCLASS equal to '11'.

#### 7.6.2.2 Overhead Information

The base station sends overhead messages to provide the mobile station with the information that it needs to operate with the base station.

The base station shall maintain a configuration sequence number (CONFIG_SEQ), and shall increment CONFIG_SEQ modulo 64 whenever the base station modifies the following messages:

1. *System Parameters Message*
2. *Neighbor List Message* (Band Class 0 only)
3. *CDMA Channel List Message*
4. *Extended System Parameters Message*
5. *Extended Neighbor List Message* (Band Class 1 only)
6. *General Neighbor List Message*
7. *Global Service Redirection Message*

The base station shall maintain an access configuration sequence number (ACC_CONFIG_SEQ), and shall increment ACC_CONFIG_SEQ modulo 64 whenever the base station modifies the *Access Parameters Message*.

On each of the Paging Channels the base station transmits, the base station shall send each of the following system overhead messages at least once per $T_{1b}$ seconds:

1. *Access Parameters Message*
2. *CDMA Channel List Message*

3. *Extended System Parameters Message*
4. *System Parameters Message*

If BAND_CLASS is equal to '00001', the base station shall send the *Extended Neighbor List Message* and may also send the *General Neighbor List Message*. If BAND_CLASS is equal to '00000', the base station shall send the *Neighbor List Message*, and may also send the *General Neighbor List Message*. If the base station is sending the *Neighbor List Message*, it shall send it at least once per $T_{1b}$ seconds. If the base station is sending the *Extended Neighbor List Message*, it shall send it at least once per $T_{1b}$ seconds. If the base station is sending the *General Neighbor List Message*, it shall send it at least once per $T_{1b}$ seconds.

If the base station uses addressing modes requiring use of only the IMSI_M_S, independent of values of the IMSI_M_11_12 and MCC_M, the base station shall set IMSI_T_SUPPORTED to '0', MCC to '1111111111', and IMSI_11_12 to '1111111' in the *Extended System Parameters Message*.

If the base station sets IMSI_T_SUPPORTED to '1', the base station shall not set PREF_MSID_TYPE to '00' in the *Extended System Parameters Message*.

The base station may send a *Global Service Redirection Message* on any given Paging Channel. If the message is sent, the base station shall send it at least once per $T_{1b}$ seconds.

7.6.2.3 Mobile Station Directed Messages

The base station shall use the following rules for selecting the Paging Channel slot in which to send a message to a mobile station:

- If the base station is able to determine that the mobile station is operating in the non-slotted mode, the base station may send the message to the mobile station in any Paging Channel slot.
- If the base station is able to determine that the mobile station is operating in the slotted mode and is able to determine the mobile station's slot cycle index (see 6.6.2.1.1.3), the base station shall send the message at least once in an assigned Paging Channel slot for the mobile station (see 7.6.2.1.3), with the position within the slot subject to the following limitations:
  - If the mobile station has registered with a class 0 IMSI, the base station shall not send the message in the assigned Paging Channel slot after sending a *General Page Message* with CLASS_0_DONE set to '1' in that slot.
  - If the mobile station has registered with a class 1 IMSI, the base station shall not send the message in the assigned Paging Channel slot after sending a *General Page Message* with CLASS_1_DONE set to '1' in that slot.
  - If the mobile station has been assigned a TMSI, the base station shall not send the message in the assigned Paging Channel slot after sending a *General Page Message* with TMSI_DONE set to '1' in that slot.

- If the base station is not able to determine whether the mobile station is operating in the non-slotted mode, or the base station is not able to determine the mobile station's slot cycle index, the base station shall assume that the mobile station is operating in the slotted mode with a slot cycle index which is the smaller of MAX_SLOT_CYCLE_INDEX and 1. The base station shall send the message at least once in an assigned Paging Channel slot for the mobile station (see 7.6.2.1.3), with the position within the slot subject to the following limitations:
  - If the mobile station has registered with a class 0 IMSI, the base station shall not send the message in the assigned Paging Channel slot after sending a *General Page Message* with CLASS_0_DONE set to '1' in that slot.
  - If the mobile station has registered with a class 1 IMSI, the base station shall not send the message in the assigned Paging Channel slot after sending a *General Page Message* with CLASS_1_DONE set to '1' in that slot.
  - If the mobile station has been assigned a TMSI, the base station shall not send the message in the assigned Paging Channel slot after sending a *General Page Message* with TMSI_DONE set to '1' in that slot.

The base station should send at least one *General Page Message* in each Paging Channel slot. The base station shall not omit a *General Page Message* in two adjacent slots. The base station should send messages directed to mobile stations operating in the slotted mode as the first messages in the slot.

If the base station sends a *General Page Message* with ORDERED_TMSIS set to '1' in a slot, the base station shall order page records with PAGE_CLASS equal to '10' in ascending order such that if a particular TMSI_CODE value for one page record is greater than the TMSI_CODE value for another page record, the page record with the greater TMSI_CODE value is sent later in the slot.

The base station may send the following messages directed to a mobile station on the Paging Channel. If the base station sends a message, the base station shall comply with the specified requirements for sending the message, if any:

1. *Abbreviated Alert Order*
2. *Audit Order*
3. *Authentication Challenge Message*
4. *Base Station Acknowledgment Order*
5. *Base Station Challenge Confirmation Order*
6. *Channel Assignment Message*
7. *Data Burst Message*
8. *Extended Channel Assignment Message*
9. *Feature Notification Message*
10. *General Page Message*
11. *Intercept Order*

12. *Local Control Order*
13. *Lock Until Power-Cycled Order*
14. *Maintenance Required Order*
15. *Registration Accepted Order*
16. *Registration Rejected Order*
17. *Registration Request Order*
18. *Release Order*
19. *Reorder Order*
20. *Service Redirection Message*
21. *SSD Update Message*
22. *Status Request Message*
23. *TMSI Assignment Message*
24. *Unlock Order*

#### 7.6.2.4 Broadcast Messages

The base station may transmit *Data Burst Messages* directed to broadcast addresses. When transmitting broadcast messages that are to be received by mobile stations operating in the slotted mode, the base station may use broadcast page records (see 7.7.2.3.2.17) in accordance with the broadcast procedures specified in 7.6.2.4.1 to announce the presence of broadcast *Data Burst Messages* on the Paging Channel. The base station should use the rules specified in 7.6.2.4.1 for selecting the Paging Channel slot in which to send a broadcast *Data Burst Message*.

##### 7.6.2.4.1 Broadcast Procedures for Slotted Mode

The base station may announce the presence of broadcast Data Burst Messages on the Paging Channel by paging, using a broadcast address with PAGE_CLASS equal to '11' and PAGE_SUBCLASS equal to '00'.

###### 7.6.2.4.1.1 General Overview

The base station may transmit *Data Burst Messages* directed to broadcast addresses. Since mobile stations operating in slotted mode do not constantly monitor a Paging Channel, it is necessary to use special procedures to ensure that mobile stations operating in the slotted mode are able to receive the message. The base station may either send a broadcast message in many slots, or may send a broadcast message in a predetermined paging slot. This single transmission of the pending broadcast message may be announced by a preceding "broadcast page". A broadcast page is a *General Page Message* record with the PAGE_CLASS field set to '11'.

If pending transmission of the broadcast message is announced by the broadcast page, mobile stations use the BC_ADDR and the BURST_TYPE fields of the broadcast page record to determine whether or not to receive the announced broadcast message. The base station

sets the value of the BC_ADDR according to the requirements of the standards related to the BURST_TYPE. There is a predetermined timing relationship between the sending of the broadcast page and the sending of the related broadcast message. This timing relationship allows mobile stations to determine which slot to monitor in order to receive the broadcast message.

To reduce the overhead for sending broadcast pages or broadcast messages, a base station may use periodic broadcast paging (see 7.6.2.4.1.2.1.2). When periodic broadcast paging is enabled, broadcast pages or broadcast messages are sent only once during a broadcast paging cycle. Mobile stations that are operating in the slotted mode and are configured to receive broadcast messages monitor the paging channel during the slot in which the broadcast pages or broadcast messages are sent. For the purpose of periodic broadcast paging, system time is divided into broadcast paging cycles, each having a duration of (**B** + 3) Paging Channel slots, where **B** is a power of two. In each broadcast paging cycle, the first paging slot may contain broadcast pages or broadcast messages.

#### 7.6.2.4.1.2 Requirements for Sending Broadcast Messages

##### 7.6.2.4.1.2.1 Broadcast Delivery Options

When transmitting broadcast messages that are to be received by mobile stations operating in the slotted mode, the base station shall use one of the two following procedures to transmit a broadcast message.

###### 7.6.2.4.1.2.1.1 Method 1: Multi-Slot Broadcast Message Transmission

The base station may send a broadcast message using this method without regard to whether periodic broadcast paging is enabled or disabled (see 7.6.2.4.1.2.3).

When using this method, the base station shall send the broadcast message in a sufficient number of paging slots such that it may be received by any mobile station that is operating in the slotted mode. For example, the base station may send the broadcast message in **M** successive paging slots where **M** is the number of slots in a maximum paging cycle as defined in 6.6.2.1.1.3.3.

###### 7.6.2.4.1.2.1.2 Method 2: Periodic Broadcast Paging

If the base station sends a broadcast message using this method, then the base station shall enable periodic broadcast paging (see 7.6.2.4.1.2.3).

To deliver a broadcast message using this method, the base station should perform the following:

- If the number and size of the broadcast messages waiting to be sent are such that the messages can be sent in a single slot, the base station should send the broadcast messages in the first slot of the next broadcast paging cycle (see 6.6.2.1.1.3.3).
- If there is a single broadcast message waiting to be sent, the base station should send the broadcast message beginning in the first slot of the next broadcast paging cycle (see 6.6.2.1.1.3.3).

- Otherwise, the base station should first include a broadcast page for each broadcast message to be sent, in a *General Page Message* that is sent in the first slot of the next broadcast paging cycle (see 6.6.2.1.1.3.3). The base station should then send the related broadcast messages in the paging slots specified in 7.6.2.4.1.2.4.

7.6.2.4.1.2.2 Duplicate Broadcast Message Transmission

If the base station sends a broadcast message or a broadcast page and an associated broadcast message more than once when periodic broadcast paging is enabled (see 7.6.2.4.1.2.3), then all repetitions of the broadcast message or the broadcast page and the associated broadcast message should be sent within 4 × (**B** + 3) paging slots of the paging slot in which the broadcast message or broadcast page was first sent. (**B** + 3 is the duration of the broadcast paging cycle as defined in 6.6.2.1.1.3.3).

When a base station sends a broadcast message or a broadcast page when periodic broadcast paging is enabled (see 7.6.2.4.1.2.3), and the base station has a second, different broadcast message to send which contains identical BURST_TYPE and BC_ADDR fields, then the base station shall wait 4 × (**B** + 3) paging slots after the first slot of the broadcast paging cycle containing the final sending of the first broadcast message or broadcast page before sending the second, different broadcast message or related broadcast page.

7.6.2.4.1.2.3 Periodic Broadcast Paging

The base station uses the BCAST_INDEX field of the *Extended System Parameters Message* to specify the current state of periodic broadcast paging to all mobile stations.

To enable periodic broadcast paging, the base station shall set the BCAST_INDEX field of the *Extended System Parameters Message* to an unsigned 3-bit number in the range 1-7, equal to the broadcast slot cycle index as defined in 6.6.2.1.1.3.3. The value of the BCAST_INDEX field may exceed the value of the MAX_SLOT_CYCLE_INDEX field sent in the *System Parameters Message*.

To indicate that periodic broadcast paging is either disabled or is not supported by the base station, the base station shall set the BCAST_INDEX field to '000'.

7.6.2.4.1.2.4 Broadcast Message Slot Determination

When a base station uses broadcast paging, it shall determine the slot in which to send the corresponding broadcast message using the following procedures:

- The base station shall consider a broadcast page to have been sent in the paging slot in which the *General Page Message* containing the broadcast page began.
- The reference slot is defined as the paging slot in which the broadcast page was sent.
- Let n represent the ordinal number of the broadcast page relative to other broadcast pages that are contained in the same *General Page Message* (n = 1, 2, 3,...). The base station shall send the broadcast message announced by broadcast page n in the paging slot that occurs n × 3 paging slots after the reference slot.

### 7.6.3 Access Channel Processing

During *Access Channel Processing*, the base station monitors the Access Channel to receive messages which the mobile station sends while the mobile station is in the *System Access State*.

Each Access Channel is associated with a Paging Channel. Up to 32 Access Channels can be associated with a Paging Channel. The number of Access Channels associated with a particular Paging Channel is specified in the *Access Parameters Message* sent on that Paging Channel.

The base station shall continually monitor all Access Channels associated with each Paging Channel that the base station transmits.

#### 7.6.3.1 Access Channel Procedures

##### 7.6.3.1.1 Message Reception and Acknowledgment Procedures

The Access Channel acknowledgment procedures facilitate the reliable exchange of messages between the base station and the mobile station on the Paging Channel (see 7.6.2.1.4) and on the Access Channel. The base station uses the fields ACK_TYPE (acknowledgment address type), ACK_SEQ (acknowledgment sequence number), MSG_SEQ (message sequence number), ACK_REQ (acknowledgment required), and VALID_ACK (valid acknowledgment) to support this mechanism. These fields are referred to as layer 2 fields, and the acknowledgment procedures are referred to as layer 2 procedures. All other message fields and the processing thereof are referred to as pertaining to layer 3. (See Annex C for further discussion of layering.)

A message received on the Access Channel requires acknowledgment if the ACK_REQ field is set to '1'. In this specification, all messages sent on the Access Channel require acknowledgment. All messages sent on the Access Channel contain identification data for the mobile station sending the message, and are acknowledged by Paging Channel messages.

The base station acknowledges a received message by transmitting a message on the Paging Channel with the ACK_SEQ field set equal to the MSG_SEQ field of the received message, and with the VALID_ACK field set to '1'. A message transmitted with the ACK_SEQ and VALID_ACK fields set in this manner is referred to as including an acknowledgment of the received message.

After receiving a message requiring acknowledgment from a mobile station on the Access Channel, the base station shall transmit a message directed to that mobile station, including acknowledgment, on the corresponding Paging Channel. The acknowledgment shall be transmitted within ACC_TMO × 80 ms after receiving the message, where ACC_TMO is the value sent in the *Access Parameters Message* on the mobile station's assigned Paging Channel.

When a received message requires acknowledgment and no message directed to the mobile station is available within ACC_TMO × 80 ms after the message is received, the base station shall transmit a *Base Station Acknowledgment Order* directed to the mobile station, including the acknowledgment.

If the base station sends a *Channel Assignment Message* or an *Extended Channel Assignment Message*, the base station need not set VALID_ACK to '1', and may set ACK_SEQ to any value.

Whenever a message requiring acknowledgment is received from a mobile station, the base station shall set the VALID_ACK field to '1' and shall set the ACK_SEQ field in subsequent Paging Channel messages directed to that mobile station, to the MSG_SEQ specified in the received message. The VALID_ACK field shall be set to '1' for the first message with this value of ACK_SEQ sent to the mobile station on the Paging Channel. For all Paging Channel messages after the first, directed to the same mobile station and containing the same ACK_SEQ field value:

- The base station may set VALID_ACK to '1' if the message is sent within $T_{4m}$ seconds after the first message (see Figure 7.6.2.1.4-1).
- The base station shall set VALID_ACK field to '0' if the message is sent more than $T_{4m}$ seconds after the first message.

If the base station performs duplicate message detection using Access Channel message sequence numbers, it should use the following procedures. The base station should store, for each mobile station that is active on the Access Channel, a received status indicator for each possible value of the Access Channel message MSG_SEQ field (MSG_SEQ_RCVD[n], where n is 0 through 7).

The base station should consider a mobile station active on the Access Channel when it receives an Access Channel message from the mobile station. The base station should consider the mobile station inactive on the Access Channel if:

- It has received no message from the mobile station within a time period to be selected by the base station manufacturer; or
- The mobile station has been assigned to a Traffic Channel; or
- The mobile station has been assigned to an analog system; or
- The mobile station has been directed to another system by a *Service Redirection Message* or
- The base station has received a power-down registration from the mobile station.

When the base station receives an Access Channel message from an inactive mobile station, it should set MSG_SEQ_RCVD[n] to NO for all values of n from 0 to 7. The base station should then consider the mobile station active on the Access Channel.

For each active mobile station, the base station should perform the following procedures:

- When a message requiring acknowledgment is received (including a message received while the mobile station was inactive), with message sequence number MSG_SEQ, and MSG_SEQ_RCVD[MSG_SEQ] is equal to NO, the base station should process the message as a new message. The base station should set MSG_SEQ_RCVD[MSG_SEQ] to YES, and should set MSG_SEQ_RCVD[(MSG_SEQ + 2) modulo 8] to NO.

- When a message requiring acknowledgment is received, with message sequence number MSG_SEQ, and MSG_SEQ_RCVD[MSG_SEQ] is equal to YES, the base station shall acknowledge the message as specified earlier in this section but should not perform any further processing of the message other than processing of common pilot measurement fields (see 6.7.1.3.1.3). If the ACC_HO_LIST_UPD field of the *Extended System Parameters Message* is set to '1', the base station should process the common pilot measurement fields.

7.6.3.2 Reserved

7.6.3.3 Response to Page Response Message

If the base station receives a *Page Response Message*, the base station should send a *Channel Assignment Message*, an *Extended Channel Assignment Message*, or a *Release Order*. The base station may also start authentication procedures (see 6.3.12), start TMSI assignment procedures (see 6.3.15), send a *Data Burst Message*, or request status information records with the *Status Request Message*. If the base station is operating with the mobile station in Band Class 0, the base station may also request the status information records with the *Status Request Order*.

If the base station sends the *Extended Channel Assignment Message*, the base station may include more than one pilot to be in the Active Set.

If the base station sends a *Channel Assignment Message* or an *Extended Channel Assignment Message*, the base station shall perform the following:

- If the message directs the mobile station to a CDMA Traffic Channel, the base station shall begin *Traffic Channel Processing* (see 7.6.4) for the mobile station.
- If the message directs the mobile station to an 800 MHz wide analog voice channel, the base station shall follow the procedure described in 3.6.4.
- If the message directs the mobile station to an 800 MHz narrow analog voice channel, the base station shall follow the procedure described in 3.6.5A of TIA/EIA/IS-91-A.

7.6.3.4 Response to Orders

No requirements.

7.6.3.5 Response to Origination Message

If the base station receives an *Origination Message*, the base station should send a *Channel Assignment Message*, an *Extended Channel Assignment Message*, an *Intercept Order*, a *Reorder Order*, a *Release Order*, a *PACA Message*, or a *Service Redirection Message*. The base station may also commence authentication procedures (see 6.3.12) or TMSI assignment procedures (see 6.3.15). The base station may also request status information records with the *Status Request Message*. If the base station is operating with the mobile station in Band Class 0, the base station may also request the status information records with the *Status Request Order*.

If the base station sends the *Extended Channel Assignment Message*, the base station may include more than one pilot to be in the Active Set.

If the base station sends a *Channel Assignment Message* or an *Extended Channel Assignment Message*, the base station shall perform the following:

- If the message directs the mobile station to a CDMA Traffic Channel, the base station shall begin *Traffic Channel Processing* (see 7.6.4) for the mobile station.
- If the message directs the mobile station to an 800 MHz wide analog voice channel, the base station shall follow the procedure described in 3.6.4.
- If the message directs the mobile station to an 800 MHz narrow analog voice channel, the base station shall follow the procedure described in 3.6.5A of TIA/EIA/IS-91-A.

If the base station sends a *Channel Assignment Message*, the base station shall not set RESPOND equal to '0' when ASSIGN_MODE = '001', ASSIGN_MODE = '010', or ASSIGN_MODE = '101'. If the base station sends an *Extended Channel Assignment Message*, the base station shall not set RESPOND equal to '0' when ASSIGN_MODE = '001' or ASSIGN_MODE = '010'

#### 7.6.3.6 Response to Registration Message

If the base station receives a *Registration Message*, the base station may send a *Registration Accepted Order*, a *Registration Rejected Order*, or a *Service Redirection Message*. The base station may also start authentication procedures (see 6.3.12). The base station may also request status information records with the *Status Request Message*. If the base station is operating with the mobile station in Band Class 0, the base station may also request the status information records with the *Status Request Order.*

#### 7.6.3.7 Response to Data Burst Message

No requirements.

### 7.6.4 Traffic Channel Processing

During *Traffic Channel Processing*, the base station uses the Forward and Reverse Traffic Channels to communicate with the mobile station while the mobile station is in the *Mobile Station Control on the Traffic Channel State*.

Traffic Channel processing consists of the following substates:

- *Traffic Channel Initialization Substate* - In this substate, the base station begins transmitting on the Forward Traffic Channel and receiving on the Reverse Traffic Channel.
- *Waiting for Order Substate* - In this substate, the base station sends the *Alert With Information Message* to the mobile station.
- *Waiting for Answer Substate* - In this substate, the base station waits for the *Connect Order* from the mobile station.

- *Conversation Substate* - In this substate, the base station exchanges Traffic Channel frames with the mobile station in accordance with the current service configuration.
- *Release Substate* - In this substate, the base station disconnects the call.

7.6.4.1 Special Functions and Actions

The base station performs the following special functions and actions in one or more of the Traffic Channel processing substates:

7.6.4.1.1 Forward Traffic Channel Power Control

When the base station enables Forward Traffic Channel power control, the mobile station reports frame error rate statistics to the base station using the *Power Measurement Report Message*.

The base station may enable Forward Traffic Channel power control using the *System Parameters Message* sent on the Paging Channel and the *Power Control Parameters Message* sent on the Forward Traffic Channel. The base station may enable periodic reporting which causes the mobile station to report frame error rate statistics at specified intervals. The base station may also enable threshold reporting which causes the mobile station to report frame error rate statistics when the frame error rate reaches a specified threshold.[9]

The base station may use the reported frame error rate statistics to adjust the transmit power of the Forward Traffic Channel.

7.6.4.1.2 Service Configuration and Negotiation

During Traffic Channel operation, the mobile station and base station communicate through the exchange of Forward and Reverse Traffic Channel frames. The mobile station and base station use a common set of attributes for building and interpreting Traffic Channel frames. This set of attributes, referred to as a service configuration, consists of the following:

1. Forward and Reverse Multiplex Options: These control the way in which the information bits of the Forward and Reverse Traffic Channel frames, respectively, are divided into various types of traffic, such as signaling traffic, primary traffic and secondary traffic. Associated with each multiplex option is a rate set which specifies the frame structures and transmission rates supported by the multiplex option (see, for example, 6.1.3.3.11). Multiplex Options 3 through 16 also indicate the capability for supporting Supplemental Code channel transmission on the Forward and Reverse Traffic Channels. Invocation of Supplemental Code Channel operation on the Forward or Reverse Traffic Channels occurs by the *Supplemental Channel Request Message*, the *Supplemental Channel Assignment Message*, and the *General Handoff Direction Message*. The multiplex option used for the Forward Traffic

[9] Both periodic and threshold reporting may be enabled, either one of the forms of reporting may be enabled, or both forms of reporting may be disabled via the *System Parameters Message* on the Paging Channel or the *Power Control Parameters Message* on the Forward Traffic Channel.

Channel can be the same as that used for the Reverse Traffic Channel, or it can be different.

2. Forward and Reverse Traffic Channel Transmission Rates: These are the transmission rates actually used for the Forward and Reverse Traffic Channels, respectively. The transmission rates for the Forward Traffic Channel can include all of the transmission rates supported by the rate set associated with the Forward Traffic Channel multiplex option, or a subset of the supported rates. Similarly, the transmission rates used for the Reverse Traffic Channel can include all rates supported by the rate set associated with the Reverse Traffic Channel multiplex option, or a subset of the supported rates. The transmission rates used for the Forward Traffic Channel can be the same as those used for the Reverse Traffic Channel, or they can be different.

3. Service Option Connections: These are the services in use on the Traffic Channel. It is possible that there is no service option connection, in which case the mobile station and base station use the Forward and Reverse Traffic Channels to send only signaling traffic and null Traffic Channel data; or there can be one or multiple service option connections.

   Associated with each service option connection are a service option, a Forward Traffic Channel traffic type, a Reverse Traffic Channel traffic type and a service option connection reference. The associated service option formally defines the way in which traffic bits are processed by the mobile station and base station. The associated Forward and Reverse Traffic Channel traffic types specify the types of traffic used to support the service option. A service option can require the use of a particular type of traffic, such as primary or secondary, or it can accept more than one traffic type. A service option can be one-way, in which case it can be supported on the Forward Traffic Channel only or the Reverse Traffic Channel only. Alternatively, a service option can be two-way, in which case it can be supported on the Forward and Reverse Traffic Channels simultaneously. Connected service options can also invoke operation on Supplemental Code Channels in either one or both of the Forward and Reverse Traffic Channels by negotiating a multiplex option that supports operation on Supplemental Code Channels (Multiplex Options 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, or 16), and by using the appropriate Supplemental Code Channel assignment messages (i.e., the *Supplemental Channel Request Message*, the *Supplemental Channel Assignment Message*, and the *General Handoff Direction Message)*. After Supplemental Code Channels have been assigned by the base station, the connected service option can transmit primary and/or secondary traffic on Supplemental Code Channels. The associated service option connection reference provides a means for uniquely identifying the service option connection. The reference serves to resolve ambiguity when there are multiple service option connections in use.

The mobile station can request a default service configuration associated with a service option at call origination, and can request new service configurations during Traffic Channel operation. A requested service configuration can differ greatly from its predecessor or it can be very similar. For example, the mobile station can request a service

configuration in which all of the service option connections are different from those of the existing configuration; or the mobile station can request a service configuration in which the existing service option connections are maintained with only minor changes, such as a different set of transmission rates or a different mapping of service option connections to Forward and Reverse Traffic Channel traffic types.

If the mobile station requests a service configuration that is acceptable to the base station, they both begin using the new service configuration. If the mobile station requests a service configuration that is not acceptable to the base station, the base station can reject the requested service configuration or propose an alternative service configuration. If the base station proposes an alternative service configuration, the mobile station can accept or reject the base station's proposed service configuration, or propose yet another service configuration. This process, called service negotiation, ends when the mobile station and base station find a mutually acceptable service configuration, or when either the mobile station or base station rejects a service configuration proposed by the other.

It is also possible for the base station to request a default service configuration, associated with a service option, when paging the mobile station and request new service configurations during Traffic Channel operation. The service negotiation proceeds as described above, but with the roles of the mobile station and base station reversed.

For CDMA mode operation in Band Class 0, the mobile station and base station can also use an alternative method for negotiating a service configuration known as service option negotiation. Service option negotiation is similar to service negotiation, but offers less flexibility for specifying the attributes of the service configuration. During service option negotiation, the base station or mobile station specifies only which service option is to be used. There is no facility for explicitly specifying the multiplex options, traffic types or transmission rates to be used on the Forward and Reverse Traffic Channels in conjunction with the service option. Instead, implicit service configuration attributes are assumed. In particular, the Forward and Reverse Multiplex Options and transmission rates are assumed to be the default multiplex options and transmission rates associated with the requested service option, and the traffic type for both the Forward and Reverse Traffic Channels is assumed to be primary traffic. Furthermore, a service configuration established using service option negotiation is restricted to having only a single service option connection.

At mobile station origination and termination, the type of negotiation to use, either service negotiation or service option negotiation, is indicated in the *Channel Assignment Message*. Service negotiation is always used with the *Extended Channel Assignment Message*. If a CDMA-to-CDMA hard handoff occurs during the call, the type of negotiation to use following the handoff is indicated in the *Extended Handoff Direction Message* or *General Handoff Direction Message*.

For CDMA mode operation in Band Class 1, only service negotiation is to be used.

The following messages are used to support service negotiation:

1. *Service Request Message:* The mobile station can use this message to propose a service configuration, or to accept or reject a service configuration proposed in a *Service Response Message*. The base station can use this message to propose a

service configuration, or to reject a service configuration proposed in a *Service Response Message*.

2. *Service Response Message:* The mobile station can use this message to accept or reject a service configuration proposed in a *Service Request Message*, or to propose an alternative service configuration. The base station can use this message to reject a service configuration proposed in a *Service Request Message*, or to propose an alternative service configuration.
3. *Service Connect Message:* The base station can use this message to accept a service configuration proposed in a *Service Request Message* or *Service Response Message*, and instruct the mobile station to begin using the service configuration.
4. *Service Connect Completion Message:* The mobile station can use this message to acknowledge the transition to a new service configuration.
5. *Service Option Control Message:* The mobile station and base station can use this message to invoke service option specific functions.
6. *Extended Channel Assignment Message:* The base station can use this message to accept or reject the initial service configuration proposed by the mobile station in an *Origination Message* or a *Page Response Message*.

The following messages are used to support service option negotiation:

1. *Service Option Request Order:* The mobile station and base station can use this message either to request a service option or suggest an alternative service option.
2. *Service Option Response Order:* The mobile station and base station can use this message to accept or reject a service option request.
3. *Service Option Control Order:* The mobile station and base station can use this message to invoke service option specific functions.

The following messages are used to support both service negotiation and service option negotiation:

1. *Origination Message:* The mobile station can use this message to propose an initial service configuration.
2. *Channel Assignment Message:* The base station can use this message to accept or reject the initial service configuration proposed by the mobile station in an *Origination Message* or a *Page Response Message*, and to indicate which type of negotiation, either service negotiation or service option negotiation, is to be used during the call.
3. *Extended Handoff Direction Message:* The base station can use this message to indicate which type of negotiation, either service negotiation or service option negotiation, is to be used following a CDMA-to-CDMA hard handoff.
4. *General Handoff Direction Message:* The base station can use this message to indicate which type of negotiation, either service negotiation or service option negotiation, is to be used following a CDMA-to-CDMA hard handoff. The base station can use this message to accept a service configuration proposed in a *Service*

*Request Message* or *Service Response Message*. The base station can also use this message to instruct the mobile station to begin using the service configuration.

5. *General Page Message:* The base station can use this message to propose an initial service configuration.
6. *Page Response Message:* The mobile station can use this message to accept or reject the initial service configuration proposed by the base station in a *General Page Message*, or to propose an alternative initial service configuration.
7. *Status Request Message:* The base station can use this message to request service capability information from the mobile station.
8. *Status Response Message:* The mobile station can use this message to return the service capability information requested by the base station in a *Status Request Message*.
9. *Extended Status Response Message:* The mobile station can use this message to return the service capability information requested by the base station in a *Status Request Message*.

#### 7.6.4.1.2.1 Use of Variables

##### 7.6.4.1.2.1.1 Maintaining the Service Request Sequence Number

The base station shall maintain a service request sequence number variable, SERV_REQ_NUM, for use with service negotiation. Upon beginning Traffic Channel processing, the base station shall set SERV_REQ_NUM to 0. Each time the base station sends a new *Service Request Message*, it shall set the SERV_REQ_SEQ field of the message to the current value of SERV_REQ_NUM, and shall then set SERV_REQ_NUM equal to (SERV_REQ_NUM + 1) modulo 8.

##### 7.6.4.1.2.1.2 Maintaining the Service Connect Sequence Number

The base station shall maintain a service connect sequence number variable, SERV_CON_NUM, for use with service negotiation. Upon beginning Traffic Channel processing, the base station shall set SERV_CON_NUM to 0. Each time the base station sends a new *Service Connect Message* or a *General Handoff Direction Message* containing a service configuration record, it shall set the SERV_CON_SEQ field of the message to the current value of SERV_CON_NUM, and shall then set SERV_CON_NUM equal to (SERV_CON_NUM + 1) modulo 8.

##### 7.6.4.1.2.1.3 Assigning Service Option Connection References

When the base station assigns a service option connection reference for use in identifying a new service option connection during service negotiation, the base station shall use the following criteria:

1. The base station shall not assign a reference equal to '00000000'; and
2. The base station shall not assign a reference that is associated with a service option connection of the current service configuration; and

3. If there was a previous service configuration, the base station shall not assign a reference that was associated with a service option connection of the previous service configuration.

7.6.4.1.2.1.4 Maintaining the Service Negotiation Indicator Variable

The base station shall maintain a service negotiation indicator variable, SERV_NEG, to indicate which type of negotiation to use, either service negotiation or service option negotiation. The base station shall set SERV_NEG to enabled whenever service negotiation is to be used, and shall set SERV_NEG to disabled whenever service option negotiation is to be used. The precise rules for setting SERV_NEG are specified in 7.6.4.2 and 7.6.6.2.2.2.

For CDMA operation in Band Class 1, the base station shall set SERV_NEG to enabled.

7.6.4.1.2.1.5 Maintaining the Service Option Request Number

The base station shall maintain a service option request number variable, SO_REQ, for use with service option negotiation. The base station shall set SO_REQ to a special value, NULL, if the base station does not have an outstanding service option request. If the base station has an outstanding service option request, the base station shall set SO_REQ to the number of the service option associated with the outstanding request.

7.6.4.1.2.2 Service Subfunctions

As illustrated in Figure 7.6.4.1.2.2-1, the base station supports service configuration and negotiation by performing the following set of service subfunctions.

- *Normal Service Subfunction* - While this subfunction is active, the base station processes service configuration requests from the mobile station and sends service configuration requests to the mobile station.

- *Waiting for Service Request Message Subfunction* - While this subfunction is active, the base station waits to receive a *Service Request Message*.

- *Waiting for Service Response Message Subfunction* - While this subfunction is active, the base station waits to receive a *Service Response Message*.

- *Waiting for Service Action Time Subfunction* - While this subfunction is active, the base station waits for the action time associated with a new service configuration.

- *Waiting for Service Connect Completion Message Subfunction* - While this subfunction is active, the base station waits to receive a *Service Connect Completion Message*.

- *SO Negotiation Subfunction* - While this subfunction is active and the base station is operating in Band Class 0, the base station supports service option negotiation with the mobile station.

The *SO Negotiation Subfunction* supports service option negotiation. All of the other service subfunctions support service negotiation.

At any given time during Traffic Channel processing, only one of the service subfunctions is active. For example, when the base station first begins Traffic Channel processing, either

the *Normal Service Subfunction* or the *SO Negotiation Subfunction* is active. Each of the other service subfunctions may become active in response to various events which occur during the Traffic Channel substates. Typically, the base station processes events pertaining to service configuration and negotiation in accordance with the requirements for the active service subfunction. However, some Traffic Channel substates do not allow for the processing of certain events pertaining to service configuration and negotiation, or specify requirements for processing such events which supersede the requirements of the active service subfunction.

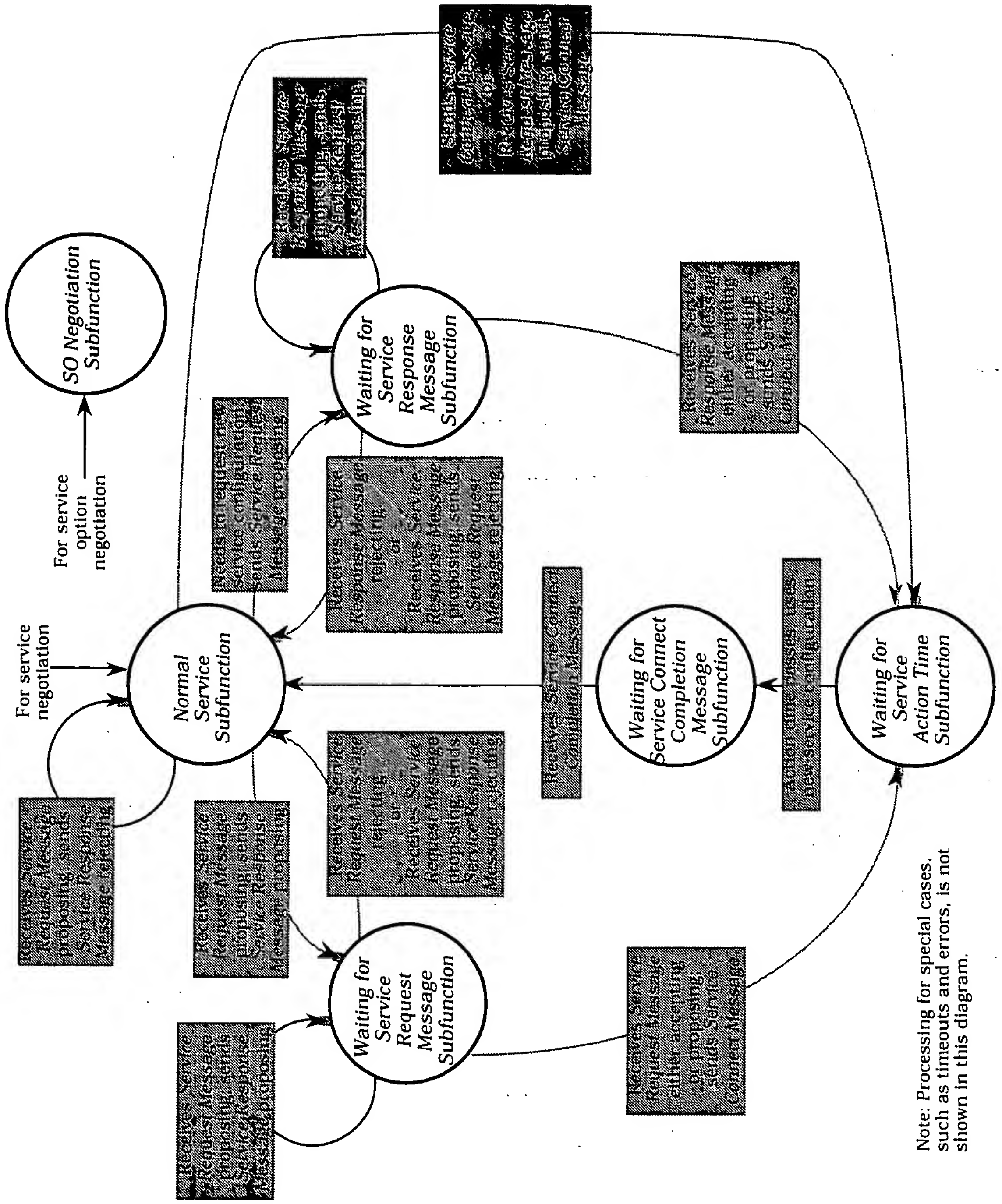


**Figure 7.6.4.1.2.2-1. Base Station Service Subfunctions**

7.6.4.1.2.2.1 Normal Service Subfunction

While this subfunction is active, the base station processes service configuration requests from the mobile station and sends service configuration requests to the mobile station.

While the *Normal Service Subfunction* is active, the base station shall perform the following:

- The base station shall process Forward and Reverse Traffic Channel frames in accordance with the current service configuration. The base station shall discard any Reverse Traffic Channel frame which has a format that is not supported by the base station. The base station may discard any type of Reverse Traffic Channel traffic that is not signaling traffic and is not part of the current service configuration.
- To initiate service negotiation for a new service configuration, the base station shall send a *Service Request Message* to propose the new service configuration and shall activate the *Waiting for Service Response Message Subfunction*.
- For any service option connection that is part of the current service configuration, the base station may send a *Service Option Control Message* to invoke a service option specific function in accordance with the requirements for the associated service option.
- The base station may send a *Service Connect Message* or a *General Handoff Direction Message* containing a service configuration record. If the base station sends this message, the base station shall activate the *Waiting for Service Action Time Subfunction.*
- If SERV_NEG changes from enabled to disabled (see 7.6.6.2.2.2), the base station shall activate the *SO Negotiation Subfunction.*
- If the base station receives one of the following service negotiation messages, the base station shall process the message according to the specified requirements, if any:
  1. *Service Connect Completion Message*
  2. *Service Option Control Message:* If the service option connection specified by the message is part of the current service configuration, and the service option specified by the message is the same as the service option associated with the service option connection, the base station shall process the message in accordance with the requirements for the service option.
  3. *Service Request Message:* The base station shall process the message as follows:
     - If the purpose of the message is to propose a service configuration, the base station shall process the message as follows:
       - If the base station accepts the proposed service configuration, the base station shall send a *Service Connect Message* or a *General Handoff Direction Message* containing a service configuration record and shall activate the *Waiting for Service Action Time Subfunction.*

   - If the base station does not accept the proposed service configuration and does not have an alternative service configuration to propose, the base station shall send a *Service Response Message* to reject the proposed service configuration.
   - If the base station does not accept the proposed service configuration and has an alternative service configuration to propose, the base station shall send a *Service Response Message* to propose the alternative service configuration. The base station shall activate the *Waiting for Service Request Message Subfunction*.

4. *Service Response Message*

- If the base station receives one of the following service option negotiation messages, the base station shall process the message according to the specified requirements, if any:

1. *Service Option Request Order*
2. *Service Option Response Order*
3. *Service Option Control Order*

7.6.4.1.2.2.2 Waiting for Service Request Message Subfunction

While this subfunction is active, the base station waits to receive a *Service Request Message*.

While the *Waiting for Service Request Message Subfunction* is active, the base station shall perform the following:

- If the base station does not receive a *Service Request Message*, the base station shall activate the *Normal Service Subfunction*.
- The base station shall process Forward and Reverse Traffic Channel frames in accordance with the current service configuration. The base station shall discard any Reverse Traffic Channel frame which has a format that is not supported by the base station. The base station may discard any type of Reverse Traffic Channel traffic that is not signaling traffic and is not part of the current service configuration.
- For any service option connection that is part of the current service configuration, the base station may send a *Service Option Control Message* to invoke a service option specific function in accordance with the requirements for the associated service option.
- If SERV_NEG changes from enabled to disabled (see 7.6.6.2.2.2), the base station shall activate the *SO Negotiation Subfunction*.
- If the base station receives one of the following service negotiation messages, the base station shall process the message according to the specified requirements, if any:

1. *Service Connect Completion Message*

2. *Service Option Control Message:* If the service option connection specified by the message is part of the current service configuration, and the service option specified by the message is the same as the service option associated with the service option connection, the base station shall process the message in accordance with the requirements for the service option.

3. *Service Request Message:* The base station shall process the message as follows:

   - If the purpose of the message is to accept a proposed service configuration, the base station shall perform one of the following actions:

     – The base station shall send a *Service Connect Message* and shall activate the *Waiting for Service Action Time Subfunction;* or

     – The base station shall send a *Service Request Message* to propose an alternative service configuration and shall activate the *Waiting for Service Response Message Subfunction.*

   - If the purpose of the message is to reject a proposed service configuration, the base station shall activate the *Normal Service Subfunction.*

   - If the purpose of the message is to propose a service configuration, the base station shall process the message as follows:

     – If the base station accepts the proposed service configuration, the base station shall send a *Service Connect Message* or a *General Handoff Direction Message* containing a service configuration record and shall activate the *Waiting for Service Action Time Subfunction.*

     – If the base station does not accept the proposed service configuration and does not have an alternative service configuration to propose, the base station shall send a *Service Response Message* to reject the proposed service configuration. The base station shall activate the *Normal Service Subfunction.*

     – If the base station does not accept the proposed service configuration and has an alternative service configuration to propose, the base station shall send a *Service Response Message* to propose the alternative service configuration.

4. *Service Response Message*

- If the base station receives one of the following service option negotiation messages, the base station shall process the message according to the specified requirements, if any:

  1. *Service Option Request Order*

  2. *Service Option Response Order*

  3. *Service Option Control Order*

7.6.4.1.2.2.3 Waiting for Service Response Message Subfunction

While this subfunction is active, the base station waits to receive a *Service Response Message*.

While the *Waiting for Service Response Message Subfunction* is active, the base station shall perform the following:

- If the base station does not receive a *Service Response Message*, the base station shall activate the *Normal Service Subfunction*.
- The base station shall process Forward and Reverse Traffic Channel frames in accordance with the current service configuration. The base station shall discard any Reverse Traffic Channel frame which has a format that is not supported by the base station. The base station may discard any type of Reverse Traffic Channel traffic that is not signaling traffic and is not part of the current service configuration.
- For any service option connection that is part of the current service configuration, the base station may send a *Service Option Control Message* to invoke a service option specific function in accordance with the requirements for the associated service option.
- If SERV_NEG changes from enabled to disabled (see 7.6.6.2.2.2), the base station shall activate the *SO Negotiation Subfunction*.
- If the base station receives one of the following service negotiation messages, the base station shall process the message according to the specified requirements, if any:
  1. *Service Connect Completion Message*
  2. *Service Option Control Message:* If the service option connection specified by the message is part of the current service configuration, and the service option specified by the message is the same as the service option associated with the service option connection, the base station shall process the message in accordance with the requirements for the service option.
  3. *Service Request Message:* The base station should not process the layer 3 fields of the message.
  4. *Service Response Message:* The base station shall process the message as follows:
     - If the service request sequence number (SERV_REQ_SEQ) from the message does not match the sequence number of the *Service Request Message* for which the base station is expecting a response, the base station shall not process the layer 3 fields of the message.
     - If the purpose of the message is to accept a proposed service configuration, the base station shall perform one of the following actions:

   - The base station shall send a *Service Connect Message* or a *General Handoff Direction Message* containing a service configuration record and shall activate the *Waiting for Service Action Time Subfunction*; or
   - The base station shall send a *Service Request Message* to propose an alternative service configuration.
  - If the purpose of the message is to reject a proposed service configuration, the base station shall activate the *Normal Service Subfunction*.
  - If the purpose of the message is to propose a service configuration, the base station shall process the message as follows:
    - If the base station accepts the proposed service configuration, the base station shall send a *Service Connect Message* or a *General Handoff Direction Message* containing a service configuration record and shall activate the *Waiting for Service Action Time Subfunction*.
    - If the base station does not accept the proposed service configuration and does not have an alternative service configuration to propose, the base station shall send a *Service Request Message* to reject the proposed service configuration. The base station shall activate the *Normal Service Subfunction*.
    - If the base station does not accept the proposed service configuration and has an alternative service configuration to propose, the base station shall send a *Service Request Message* to propose the alternative service configuration.
- If the base station receives one of the following service option negotiation messages, the base station shall process the message according to the specified requirements, if any:
  1. *Service Option Request Order*
  2. *Service Option Response Order*
  3. *Service Option Control Order*

7.6.4.1.2.2.4 Waiting for Service Action Time Subfunction

While this subfunction is active, the base station waits for the action time associated with a new service configuration.

While the *Waiting for Service Action Time Subfunction* is active, the base station shall perform the following:

- Prior to the action time associated with the *Service Connect Message* or a *General Handoff Direction Message* containing a service configuration record, the base station shall process Forward and Reverse Traffic Channel frames in accordance with the current service configuration. The base station shall discard any Reverse Traffic Channel frame which has a format that is not supported by the base station. The base station may discard any type of Reverse Traffic Channel traffic that is not signaling traffic and is not part of the current service configuration.

- At the action time associated with the *Service Connect Message* or a *General Handoff Direction Message* containing a service configuration record, the base station shall begin to use the service configuration specified by the *Service Connect Message* or a *General Handoff Direction Message* containing a service configuration record, as the current service configuration and shall begin to process Forward and Reverse Traffic Channel frames accordingly. The base station shall activate the *Waiting for Service Connect Completion Message Subfunction.*

- If SERV_NEG changes from enabled to disabled (see 7.6.6.2.2.2), the base station shall activate the *SO Negotiation Subfunction*.

- If the base station receives one of the following service negotiation messages, the base station shall process the message according to the specified requirements, if any:

    1. *Service Connect Completion Message*
    2. *Service Option Control Message:* If the service option connection specified by the message is part of the current or pending service configuration, and the service option specified by the message is the same as the service option associated with the service option connection, the base station shall process the message in accordance with the requirements for the service option.
    3. *Service Request Message*
    4. *Service Response Message*

- If the base station receives one of the following service option negotiation messages, the base station shall process the message according to the specified requirements, if any:

    1. *Service Option Request Order*
    2. *Service Option Response Order*
    3. *Service Option Control Order*

7.6.4.1.2.2.5 Waiting for Service Connect Completion Message Subfunction

While this subfunction is active, the base station waits to receive a *Service Connect Completion Message*.

While the *Waiting for Service Connect Completion Message Subfunction* is active, the base station shall perform the following:

- If the base station does not receive a *Service Connect Completion Message*, the base station shall activate the *Normal Service Subfunction*.

- The base station shall process Forward and Reverse Traffic Channel frames in accordance with the current service configuration. The base station shall discard any Reverse Traffic Channel frame which has a format that is not supported by the base station. The base station may discard any type of Reverse Traffic Channel traffic that is not signaling traffic and is not part of the current service configuration.

- The base station shall not initiate service negotiation for a new service configuration.
- If SERV_NEG changes from enabled to disabled (see 7.6.6.2.2.2), the base station shall activate the *SO Negotiation Subfunction*.
- If the base station receives one of the following service negotiation messages, the base station shall process the message according to the specified requirements, if any:
    1. *Service Connect Completion Message:* The base station shall activate the *Normal Service Subfunction*.
    2. *Service Option Control Message:* If the service option connection specified by the message is part of the current service configuration, and the service option specified by the message is the same as the service option associated with the service option connection, the base station shall process the message in accordance with the requirements for the service option.
    3. *Service Request Message*
    4. *Service Response Message*
- If the base station receives one of the following service option negotiation messages, the base station shall process the message according to the specified requirements, if any:
    1. *Service Option Request Order*
    2. *Service Option Response Order*
    3. *Service Option Control Order*

7.6.4.1.2.2.6 SO Negotiation Subfunction

While this subfunction is active, the base station supports service option negotiation with the mobile station.

Upon activating the *SO Negotiation Subfunction*, the base station shall set SO_REQ to NULL. The base station shall delete from the current service configuration any service option connection which does not use primary traffic on both the Forward and Reverse Traffic Channels.

While the *SO Negotiation Subfunction* is active, the base station shall perform the following:

- If the current service configuration includes a service option connection, the base station shall process the received primary traffic bits in accordance with the requirements for the service option associated with the service option connection; otherwise, the base station shall discard the received primary traffic bits.
- If the current service configuration includes a service option connection, the base station shall transmit primary traffic bits in accordance with the requirements for the service option associated with the service option connection; otherwise, the base station shall transmit null Traffic Channel data.

- If the current service configuration includes a service option connection, the base station may send a *Service Option Control Order* to invoke a service option specific function in accordance with the requirements for the service option associated with the service option connection.
- To initiate service option negotiation, the base station shall set SO_REQ to the number of the requested service option and shall send a *Service Option Request Order* containing the requested service option number.
- If SERV_NEG changes from disabled to enabled (see 7.6.6.2.2.2), the base station shall activate the *Normal Service Subfunction*.
- The base station shall process a service option request received in an *Origination Message*, a *Page Response Message*, or a *Service Option Request Order* as follows:
  - If the base station accepts the requested service option, the base station shall set SO_REQ to NULL and shall send a *Service Option Response Order* accepting the requested service option within $T_{4b}$ seconds. The base station shall begin using the service configuration implied by the requested service option in accordance with the requirements for the requested service option. The implied service configuration shall include the default Forward and Reverse Multiplex Options and transmission rate sets associated with the requested service option. This implied service configuration shall include one service option connection for which the service option connection reference is 1, for which the service option is the requested service option, and for which the Forward and Reverse Traffic Channel types are both primary traffic.
  - If the base station does not accept the requested service option and has an alternative service option to request, the base station shall set SO_REQ to the alternative service option number and shall send a *Service Option Request Order* requesting the alternative service option within $T_{4b}$ seconds.
  - If the base station does not accept the requested service option and does not have an alternative service option to request, the base station shall set SO_REQ to NULL and shall send a *Service Option Response Order* to reject the request within $T_{4b}$ seconds. The base station shall continue to use the current service configuration.
- If the base station receives a *Service Option Response Order*, it shall process the order as follows:
  - If the service option number specified in the order is equal to SO_REQ, the base station shall set SO_REQ to NULL and shall begin using the service configuration implied by the specified service option in accordance with the requirements for the service option. The implied service configuration shall include the default Forward and Reverse Multiplex Options and transmission rate sets associated with the requested service option. This implied service configuration shall include one service option connection for which the service option connection reference is 1, for which the service option is the requested service option, and for which the Forward and Reverse Traffic Channel types are both primary traffic.

- If the order indicates a service option rejection, the base station shall set SO_REQ to NULL. The base station shall continue to use the current service configuration.
- If the order does not indicate a service option rejection and the service option specified in the order is not equal to SO_REQ, the base station shall set SO_REQ to NULL, should send a *Release Order* (ORDQ = '00000010'), and should enter the *Release Substate*.

- If the base station receives a *Service Option Control Order*, the base station shall process the order as follows:
  - If the current service configuration includes a service option connection, the base station shall process the received *Service Option Control Order* in accordance with the requirements for the service option associated with the service option connection.
- If the base station receives one of the following service negotiation messages, the base station shall process the message according to the specified requirements, if any:
  1. *Service Connect Completion Message*
  2. *Service Option Control Message*
  3. *Service Request Message*
  4. *Service Response Message*

7.6.4.1.3 Acknowledgment Procedures

The acknowledgment procedures facilitate the reliable exchange of messages between the mobile station and the base station. The base station uses the fields ACK_SEQ (acknowledgment sequence number), MSG_SEQ (message sequence number), and ACK_REQ (acknowledgment required) to detect duplicate messages and provide a reference for acknowledgments. These message fields are referred to as layer 2 fields, and the acknowledgment procedures are referred to as layer 2 procedures. All other message fields are referred to as layer 3 fields, and the processing of layer 3 fields is referred to as layer 3 processing. (See Annex C for further discussion of layering.)

On both the Reverse Traffic Channel and the Forward Traffic Channel, the procedure for messages requiring acknowledgment is a selective repeat scheme in which a message is retransmitted only if an acknowledgment for it is not received.

7.6.4.1.3.1 Messages Requiring Acknowledgment

A Traffic Channel message requires acknowledgment when the ACK_REQ field is set to '1'.

7.6.4.1.3.1.1 Transmitting Messages and Receiving Acknowledgments

The Layer 2 protocol does not guarantee delivery of messages in any order. If the base station requires that the mobile station receive a set of messages in a certain order, the base station shall wait for an acknowledgment of each message before transmitting the next

message in the set. For messages requiring acknowledgment whose relative ordering is not important, the base station may transmit up to four such messages before receiving an acknowledgment for the first message.

The base station shall store a message sequence number for messages requiring acknowledgment (MSG_SEQ_ACK). The base station shall store an acknowledgment status indicator for each possible value of the Forward Traffic Channel message MSG_SEQ field (ACK_WAITING[n], where n is 0 through 7). The base station shall not send a new message requiring acknowledgment when ACK_WAITING[(MSG_SEQ_ACK + 4) modulo 8] is equal to YES.

The base station shall perform the following procedures:

- When the base station receives a message on the Reverse Traffic Channel, with acknowledgment sequence number ACK_SEQ, it shall set ACK_WAITING[ACK_SEQ] to NO.
- When the base station sends a new message requiring acknowledgment on the Forward Traffic Channel, it shall set ACK_WAITING[MSG_SEQ_ACK] to YES and shall set the MSG_SEQ field of the message to MSG_SEQ_ACK. The base station shall then increment MSG_SEQ_ACK, modulo 8.

The base station shall not retransmit a message for which it has received an acknowledgment.

If the base station does not receive an acknowledgment after transmitting the message, the base station shall retransmit the message. If the base station retransmits a message, the base station shall use the same MSG_SEQ number for the retransmission.

The base station shall store a retransmission counter (RETRY_COUNT) for each transmitted message requiring acknowledgment. The base station shall set RETRY_COUNT to zero prior to the first transmission of the message. After each transmission of the message, the base station shall increment RETRY_COUNT if no acknowledgment is received. The base station shall not exceed a maximum number of retransmissions, to be selected by the base station manufacturer. When RETRY_COUNT is equal to the maximum number of retransmissions, the base station shall declare an acknowledgment failure.

7.6.4.1.3.1.2 Receiving Messages and Returning Acknowledgments

Messages received on the Reverse Traffic Channel contain MSG_SEQ fields that are incremented using the same rules as messages transmitted on the Forward Traffic Channel. Separate sequence numbers are maintained for Reverse Traffic Channel Messages that require acknowledgment and for messages that do not require acknowledgment.

The base station acknowledges a received message by transmitting a message with the ACK_SEQ field set equal to the MSG_SEQ field of the received message. A message transmitted with the ACK_SEQ field set in this manner is referred to as including an acknowledgment of the received message.

Whenever a message requiring acknowledgment is received, the base station shall set the ACK_SEQ field of subsequent Forward Traffic Channel messages to the MSG_SEQ field of

the received message. If no message has been received, the base station shall set this field to '111'.

After receiving a message requiring acknowledgment, the base station shall send a message including an acknowledgment in accordance with the timing requirements specified in 6.6.4.1.3.1.1. If the base station does not have a message in which to include the acknowledgment, the base station shall send a *Base Station Acknowledgment Order*.

When a received message requires acknowledgment and no message is available within $T_{1m}$ seconds after the message is received, the base station shall transmit a *Base Station Acknowledgment Order* including the acknowledgment.

For duplicate message detection, the base station shall store a received status indicator for each possible value of the Reverse Traffic Channel message MSG_SEQ field (MSG_SEQ_RCVD[n], where n is 0 through 7). The base station shall perform the following procedures:

- When a message requiring acknowledgment is received with message sequence number MSG_SEQ, and MSG_SEQ_RCVD[MSG_SEQ] is equal to NO, the base station shall process the message as a new message. The base station shall then set MSG_SEQ_RCVD[MSG_SEQ] to YES, and shall set MSG_SEQ_RCVD[(MSG_SEQ + 4) modulo 8] to NO.
- When a message requiring acknowledgment is received with message sequence number MSG_SEQ, and MSG_SEQ_RCVD[MSG_SEQ] is equal to YES, the base station shall acknowledge the message but shall not perform any further processing of the message.

#### 7.6.4.1.3.2 Messages not Requiring Acknowledgment

A Traffic Channel message does not require acknowledgment when the ACK_REQ field is set to '0'.

The base station shall store a message sequence number for messages not requiring acknowledgment (MSG_SEQ_NOACK). For each new message sent that does not require acknowledgment, the base station shall set the MSG_SEQ field of the message to MSG_SEQ_NOACK and shall then increment MSG_SEQ_NOACK, modulo 8.

If the base station transmits the same message not requiring acknowledgment more than once, it shall use the same MSG_SEQ number for all transmissions. The base station shall complete all retransmissions of the same message within $T_{3m}$ seconds after the first transmission, as shown in Figure 7.6.4.1.3.2-1. The base station shall wait at least $T_{3m}$ seconds after the last transmission of a message not requiring acknowledgment before transmitting another message not requiring acknowledgment that has the same MSG_SEQ number, as shown in Figure 7.6.4.1.3.2-1.[10]

[10] This is necessary because it is possible that the mobile station receives only the last transmission.

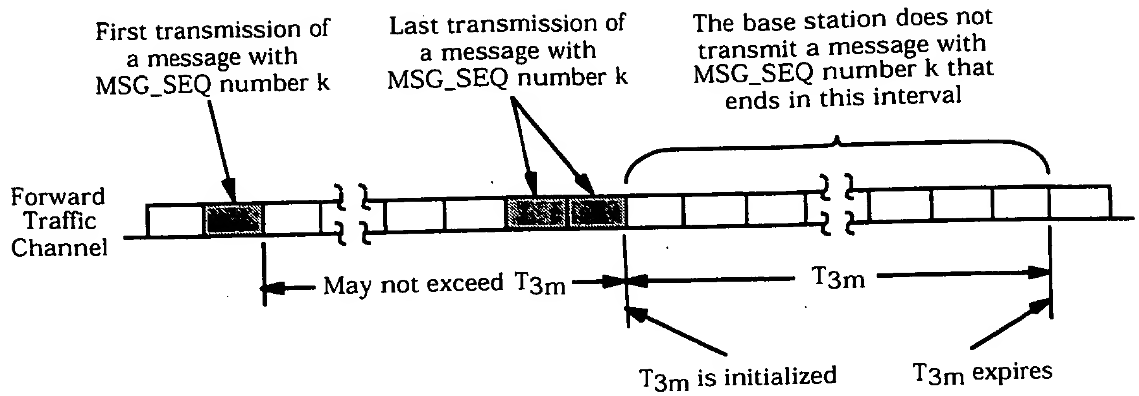


**Figure 7.6.4.1.3.2-1. Time Requirement for the Base Station Not to Reuse a MSG_SEQ Number**

7.6.4.1.3.3 Acknowledgment Procedures Reset

The base station shall reset the acknowledgment procedures as follows:

- Message sequence number reset.
  - If ACK_WAITING[n] is equal to YES for any n, the base station should save the corresponding messages and retransmit them after completing the reset of the acknowledgment procedures. For each such message, the base station shall set the retransmission counter (RETRY_COUNT) to zero.
  - The base station shall set both MSG_SEQ_ACK and MSG_SEQ_NOACK to 0, and shall set ACK_WAITING[n] to NO for all values of n from 0 to 7.
- Acknowledgment sequence number reset. The base station shall set the ACK_SEQ field of all Forward Traffic Channel messages to '111' until the first message requiring acknowledgment is received.
- Duplicate detection reset. The base station shall set MSG_SEQ_RCVD[n] to NO for all values of n from 0 to 7.

7.6.4.1.4 Message Action Times

A Forward Traffic Channel message without a USE_TIME field or with a USE_TIME field set to '0' has an implicit action time. A message with its USE_TIME field set to '1' has an explicit action time which is specified in the ACTION_TIME field of the message. A message with an explicit action time is called a pending message.

Unless otherwise specified, a message having an implicit action time shall take effect no later than the first 80 ms boundary (relative to System Time) occurring at least 80 ms after the end of the frame containing the last bit of the message. A message with an explicit action time, except for a *Power Up Function Message*, shall take effect when System Time (in 80 ms units) modulo 64 becomes equal to the message's ACTION_TIME field. A *Power Up Function Message* shall take effect ACTION_TIME_FRAME frames after the time when

System Time (in 80 ms units) modulo 64 becomes equal to the message's ACTION_TIME field. The difference in time between ACTION_TIME and the end of the frame containing the last bit of the message shall be at least 80 ms.

The base station shall support two pending messages at any given time, not including pending *Service Option Control Orders, Service Option Control Messages*, or *Power Up Function Messages*. The number of pending *Service Option Control Orders* or *Service Option Control Messages* that the base station is required to support is specific to the service option (see the relevant service option descriptions). In addition, the base station shall support one pending *Power Up Function Message*.

7.6.4.1.5 Long Code Transition Request Processing

If a request for voice privacy is specified in the *Origination Message* or *Page Response Message*, the base station may send a *Long Code Transition Request Order* (ORDQ = '00000001') requesting a transition to the private long code.

The base station shall process the *Long Code Transition Request Order* as follows:

- If the *Long Code Transition Request Order* requests a transition to the private long code and the base station accepts the request, the base station shall send a *Long Code Transition Request Order* (ORDQ = '00000001'). If the base station does not accept the private long code transition request, the base station shall send a *Long Code Transition Request Order* (ORDQ = '00000000').

- If the *Long Code Transition Request Order* requests a transition to the public long code and the base station accepts the request, the base station shall send a *Long Code Transition Request Order* (ORDQ = '00000000'). If the base station does not accept the public long code transition request, the base station shall send a *Long Code Transition Request Order* (ORDQ = '00000001').

The base station shall process the *Long Code Transition Response Order* as follows:

- If the *Long Code Transition Response Order* indicates that the mobile station accepts the long code transition requested in the *Long Code Transition Request Order* sent by the base station, the base station shall use the requested long code mask on both the Forward Traffic Channel and the Reverse Traffic Channel. The base station shall specify an explicit action time in the *Long Code Transition Request Order*. The base station shall begin using the requested long code mask using the explicit action time (see 7.6.4.1.4).

7.6.4.2 Traffic Channel Initialization Substate

In this substate, the base station begins transmitting on the Forward Traffic Channel and acquires the Reverse Traffic Channel.

Upon entering the *Traffic Channel Initialization Substate*, the base station shall perform the following:

- The base station shall reset the message acknowledgment procedures as specified in 7.6.4.1.3.3.

- The base station shall set its Forward and Reverse Traffic Channel long code masks to the public long code mask (see 7.1.3.5.6).
- The base station shall set its Forward and Reverse Traffic Channel frame offsets (see 7.1.3.5.1) to the frame offset assigned to the mobile station.
- If the base station set the ASSIGN_MODE field of the *Channel Assignment Message* to '000', the base station shall set SERV_NEG to disabled. If the base station set the ASSIGN_MODE field of the *Channel Assignment Message* to '100', the base station shall set SERV_NEG to enabled. For operation in Band Class 1, SERV_NEG is always equal to enabled.
- If the base station uses the *Extended Channel Assignment Message*, the base station shall set the SERV_NEG to enabled.
- The base station shall determine the initial service configuration as follows:
  - If SERV_NEG is equal to disabled, the initial service configuration shall include Multiplex Option 1 and Rate Set 1 for both the Forward and Reverse Traffic Channels, and shall include no service option connections.
  - If SERV_NEG is equal to enabled and the base station set the GRANTED_MODE field of the *Channel Assignment Message* or the *Extended Channel Assignment Message* to '00', the initial service configuration shall include the multiplex option and rate set for the Forward and Reverse Traffic Channels as specified by the DEFAULT_CONFIG field, and shall include no service option connections.
  - If SERV_NEG is equal to enabled and the base station set the GRANTED_MODE field of the *Channel Assignment Message* or the *Extended Channel Assignment Message* to '01' or '10', the initial service configuration shall include the default Forward and Reverse Traffic Channel multiplex options and transmission rates corresponding to the service option requested by the mobile station in the *Origination Message*, in the case of a mobile station originated call, or the *Page Response Message*, in the case of a mobile station terminated call, and shall include no service option connections.
- If SERV_NEG is equal to disabled, the base station shall activate the *SO Negotiation Subfunction* (see 7.6.4.1.2.2.6); otherwise, the base station shall activate the *Normal Service Subfunction* (see 7.6.4.1.2.2.1)

While in the *Traffic Channel Initialization Substate*, the base station shall perform the following:

- The base station shall transmit null Traffic Channel data, except when transmitting signaling traffic.
- The base station shall perform the message acknowledgment procedures as specified in 7.6.4.1.3.

- If the base station acquires the Reverse Traffic Channel, the base station shall send a *Base Station Acknowledgment Order*. The base station should send the *Base Station Acknowledgment Order* as a message requiring acknowledgment. If the call is a mobile station terminated call and the base station set BYPASS_ALERT_ANSWER to '1', the base station shall enter the *Conversation Substate* (see 7.6.4.4). If the call is a mobile station terminated call and the base station set BYPASS_ALERT_ANSWER to '0', the base station shall enter the *Waiting for Order Substate* (see 7.6.4.3.1). If the call is a mobile station originated call, the base station shall enter the *Conversation Substate* (see 7.6.4.4).
- If the base station fails to acquire the Reverse Traffic Channel, the base station shall either retransmit the *Channel Assignment Message* or the *Extended Channel Assignment Message* on the Paging Channel and remain in the *Traffic Channel Initialization Substate*, or the base station should disable transmission on the Forward Traffic Channel and discontinue the *Traffic Channel Processing* for the mobile station.

### 7.6.4.3 Alerting

#### 7.6.4.3.1 Waiting for Order Substate

In this substate, the base station sends an *Alert With Information Message* to the mobile station.

Upon entering the *Waiting for Order Substate*, the base station shall perform the following:

- If SERV_NEG is equal to disabled, the base station shall process the service option request specified in the *Page Response Message* in accordance with the requirements for the active service subfunction (see 7.6.4.1.2.2).
- If SERV_NEG is equal to enabled and the base station set the GRANTED_MODE field of the *Channel Assignment Message* or the *Extended Channel Assignment Message* to '00' or '01', the base station should initiate service negotiation to request a service configuration in accordance with the requirements for the active service subfunction (see 7.6.4.1.2.2).
- If SERV_NEG is equal to enabled and the base station set the GRANTED_MODE field of the *Channel Assignment Message* or the *Extended Channel Assignment Message* to '10', the base station should send a *Service Connect Message* in accordance with the requirements for the active service subfunction (see 7.6.4.1.2.2)

While in the *Waiting for Order Substate*, the base station shall perform the following:

- The base station shall transmit the power control subchannel as specified in 7.1.3.1.8.
- The base station shall process Forward and Reverse Traffic Channel frames in accordance with the requirements for the active service subfunction (see 7.6.4.1.2.2).
- The base station shall perform the message acknowledgment procedures as specified in 7.6.4.1.3.

- If the base station declares a loss of Reverse Traffic Channel continuity (see 7.4.2), the base station should send a *Release Order* to the mobile station. If the base station sends a *Release Order*, the base station shall enter the *Release Substate*.
- The base station may perform Forward Traffic Channel power control as specified in 7.6.4.1.1.
- The base station may request a new service configuration by initiating service negotiation or service option negotiation in accordance with the requirements for the active service subfunction (see 7.6.4.1.2.2).
- The base station may send a *Service Option Control Message* or *Service Option Control Order* to invoke a service option specific function in accordance with the requirements for the active service subfunction (see 7.6.4.1.2.2).
- The base station may request a long code transition, as specified in 7.6.4.1.5, either autonomously or in response to a request for voice privacy specified in the *Origination Message* or *Page Response Message*.
- The base station may perform authentication procedures as specified in 7.3.1.
- The base station may perform TMSI assignment procedures (see 6.3.15).
- The base station may send the following messages. If the base station sends a message, the base station shall comply with the specified requirements for sending the message, if any.

  1. *Alert With Information Message:* The base station shall enter the *Waiting for Answer Substate*.
  2. *Analog Handoff Direction Message:* The base station shall enter the Waiting for Order Task (see 3.6.4.3.1 for handoff to a wide analog channel and 3.6.5.3.1A of TIA/EIA/IS-91 for handoff to a narrow analog channel).
  3. *Audit Order*
  4. *Authentication Challenge Message*
  5. *Base Station Acknowledgment Order*
  6. *Base Station Challenge Confirmation Order*
  7. *Candidate Frequency Search Request Message*
  8. *Candidate Frequency Search Control Message*
  9. *Data Burst Message*
  10. *Extended Handoff Direction Message*
  11. *General Handoff Direction Message*
  12. *Extended Neighbor List Update Message*
  13. *In-Traffic System Parameters Message*
  14. *Local Control Order*
  15. *Lock Until Power-Cycled Order*

16. *Long Code Transition Request Order*
17. *Maintenance Order:* The base station shall enter the *Waiting for Answer Substate.*
18. *Maintenance Required Order*
19. *Message Encryption Mode Order*
20. *Mobile Station Registered Message*
21. *Neighbor List Update Message*
22. *Parameter Update Order* (see 6.3.12.1.3).
23. *Pilot Measurement Request Order*
24. *Power Control Message*
25. *Power Control Parameters Message*
26. *Power Up Function Message*
27. *Power Up Function Completion Message*
28. *Release Order:* The base station shall enter the *Release Substate.*
29. *Retrieve Parameters Message*
30. *Service Connect Message:* The base station shall send the message in accordance with the requirements for the active service subfunction (see 7.6.4.1.2.2).
31. *Service Option Control Message:* The base station shall send the message in accordance with the requirements for the active service subfunction (see 7.6.4.1.2.2).
32. *Service Option Control Order*
33. *Service Option Request Order*
34. *Service Option Response Order*
35. *Service Request Message:* The base station shall send the message in accordance with the requirements for the active service subfunction (see 7.6.4.1.2.2).
36. *Service Response Message:* The base station shall send the message in accordance with the requirements for the active service subfunction (see 7.6.4.1.2.2).
37. *Set Parameters Message*
38. *SSD Update Message*
39. *Status Request Message*
40. *Status Request Order*
41. *TMSI Assignment Message*

- If the base station receives one of the following messages from the mobile station, the base station shall process the message according to the specified requirements, if any:

  1. *Base Station Challenge Order:* The base station shall process the message as described in 6.3.12.1.9.
  2. *Candidate Frequency Search Report Message*: The base station shall process the message as described in 7.6.6.2.2.6.
  3. *Candidate Frequency Search Response Message*: The base station shall process the message as described in 7.6.6.2.2.4.
  4. *Data Burst Message*
  5. *Handoff Completion Message:* The base station shall process the message as described in 7.6.6.2.2.7.
  6. *Long Code Transition Request Order:* The base station shall process the message as described in 7.6.4.1.5.
  7. *Mobile Station Acknowledgment Order*
  8. *Mobile Station Reject Order*
  9. *Parameters Response Message*
  10. *Parameter Update Confirmation Order*
  11. *Pilot Strength Measurement Message:* The base station shall process the message as described in 7.6.6.2.2.1.
  12. *Power Measurement Report Message:* The base station may process the message as described in 7.6.4.1.1.
  13. *Release Order:* The base station shall send the mobile station a *Release Order* within $T_{2b}$ seconds and enter the *Release* Substate; otherwise, the base station shall send an *Alert with Information Message*, within $T_{2b}$ seconds, and enter the *Waiting for Answer Substate*.
  14. *Request Analog Service Order:* The base station may respond with an *Analog Handoff Direction Message*.
  15. *Request Narrow Analog Service Order:* The base station may respond with an *Analog Handoff Direction Message*.
  16. *Request Wide Analog Service Order:* The base station may respond with an *Analog Handoff Direction Message*.
  17. *Service Connect Completion Message:* The base station shall process the message in accordance with the requirements for the active service subfunction (see 7.6.4.1.2.2).
  18. *Service Option Control Message:* The base station shall process the message in accordance with the requirements for the active service subfunction (see 7.6.4.1.2.2).

19. *Service Option Control Order:* The base station shall process the message in accordance with the requirements for the active service subfunction (see 7.6.4.1.2.2).

20. *Service Option Request Order:* The base station shall process the message in accordance with the requirements for the active service subfunction (see 7.6.4.1.2.2).

21. *Service Option Response Order:* The base station shall process the message in accordance with the requirements for the active service subfunction (see 7.6.4.1.2.2).

22. *Service Request Message:* The base station shall process the message in accordance with the requirements for the active service subfunction (see 7.6.4.1.2.2).

23. *Service Response Message:* The base station shall process the message in accordance with the requirements for the active service subfunction (see 7.6.4.1.2.2).

24. *SSD Update Confirmation Order*

25. *SSD Update Rejection Order*

26. *Status Response Message*

27. *Status Message*

28. *TMSI Assignment Completion Message*

7.6.4.3.2 Waiting for Answer Substate

In this substate, the base station waits for a *Connect Order* from the mobile station.

While in the *Waiting for Answer Substate*, the base station shall perform the following:

- The base station shall transmit the power control subchannel as specified in 7.1.3.1.8.
- The base station shall process Forward and Reverse Traffic Channel frames in accordance with the requirements for the active service subfunction (see 7.6.4.1.2.2).
- The base station shall perform the message acknowledgment procedures as specified in 7.6.4.1.3.
- If the base station declares a loss of Reverse Traffic Channel continuity (see 7.4.2), the base station should send a *Release Order* to the mobile station. If the base station sends a *Release Order*, the base station shall enter the *Release Substate*.
- The base station may perform Forward Traffic Channel power control as specified in 7.6.4.1.1.
- The base station may request a new service configuration by initiating service negotiation or service option negotiation in accordance with the requirements for the active service subfunction (see 7.6.4.1.2.2).

- The base station may send a *Service Option Control Message* or *Service Option Control Order* to invoke a service option specific function in accordance with the requirements for the active service subfunction (see 7.6.4.1.2.2).
- The base station may request a long code transition, as specified in 7.6.4.1.5, either autonomously or in response to a request for voice privacy specified in the *Origination Message* or *Page Response Message*.
- The base station may perform authentication procedures as specified in 7.3.1.
- The base station may perform TMSI assignment procedures (see 6.3.15).
- The base station may send the following messages. If the base station sends a message, the base station shall comply with the specified requirements for sending the message, if any.

1. *Alert With Information Message*
2. *Analog Handoff Direction Message:* The base station shall enter the Waiting for Answer Task (see 3.6.4.3.2 for handoff to a wide analog channel and 3.6.5.3.2 of TIA/EIA/IS-91 for handoff to a narrow analog channel).
3. *Audit Order*
4. *Authentication Challenge Message*
5. *Base Station Acknowledgment Order*
6. *Base Station Challenge Confirmation Order*
7. *Candidate Frequency Search Request Message*
8. *Candidate Frequency Search Control Message*
9. *Data Burst Message*
10. *Extended Handoff Direction Message*
11. *General Handoff Direction Message*
12. *Extended Neighbor List Update Message*
13. *In-Traffic System Parameters Message*
14. *Local Control Order*
15. *Lock Until Power-Cycled Order*
16. *Long Code Transition Request Order*
17. *Maintenance Order*
18. *Maintenance Required Order*
19. *Message Encryption Mode Order*
20. *Mobile Station Registered Message*
21. *Neighbor List Update Message*
22. *Parameter Update Order* (see 6.3.12.1.3).

23. *Pilot Measurement Request Order*
24. *Power Control Message*
25. *Power Control Parameters Message*
26. *Power Up Function Message*
27. *Power Up Function Completion Message*
28. *Release Order:* The base station shall enter the *Release Substate.*
29. *Retrieve Parameters Message*
30. *Service Connect Message:* The base station shall send the message in accordance with the requirements for the active service subfunction (see 7.6.4.1.2.2).
31. *Service Option Control Message:* The base station shall send the message in accordance with the requirements for the active service subfunction (see 7.6.4.1.2.2).
32. *Service Option Control Order*
33. *Service Option Request Order*
34. *Service Option Response Order*
35. *Service Request Message:* The base station shall send the message in accordance with the requirements for the active service subfunction (see 7.6.4.1.2.2).
36. *Service Response Message:* The base station shall send the message in accordance with the requirements for the active service subfunction (see 7.6.4.1.2.2).
37. *Set Parameters Message*
38. *SSD Update Message*
39. *Status Request Message*
40. *Status Request Order*
41. *Supplemental Channel Assignment Message*
42. *TMSI Assignment Message*

- If the base station receives one of the following messages from the mobile station, the base station shall process the message according to the specified requirements, if any:

  1. *Base Station Challenge Order:* The base station shall process the message as described in 6.3.12.1.9.
  2. *Candidate Frequency Search Report Message*: The base station shall process the message as described in 7.6.6.2.2.6.

3. *Candidate Frequency Search Response Message*: The base station shall process the message as described in 7.6.6.2.2.4.
4. *Connect Order:* The base station shall enter the *Conversation Substate.*
5. *Data Burst Message*
6. *Flash With Information Message*
7. *Handoff Completion Message:* The base station shall process the message as described in 7.6.6.2.2.7.
8. *Long Code Transition Request Order:* The base station shall process the message as described in 7.6.4.1.5.
9. *Mobile Station Acknowledgment Order*
10. *Mobile Station Reject Order*
11. *Origination Continuation Message*
12. *Parameters Response Message*
13. *Parameter Update Confirmation Order*
14. *Pilot Strength Measurement Message:* The base station shall process the message as described in 7.6.6.2.2.1.
15. *Power Measurement Report Message:* The base station may process the message as described in 7.6.4.1.1.
16. *Release Order:* The base station shall send the mobile station a *Release Order* within $T_{2b}$ seconds and enter the *Release* Substate; otherwise, the base station shall send an *Alert with Information Message*, within $T_{2b}$ seconds, and enter the *Waiting for Answer Substate*.
17. *Request Analog Service Order:* The base station may respond with an *Analog Handoff Direction Message.*
18. *Request Narrow Analog Service Order:* The base station may respond with an *Analog Handoff Direction Message.*
19. *Request Wide Analog Service Order:* The base station may respond with an *Analog Handoff Direction Message.*
20. *Service Connect Completion Message:* The base station shall process the message in accordance with the requirements for the active service subfunction (see 7.6.4.1.2.2).
21. *Service Option Control Message:* The base station shall process the message in accordance with the requirements for the active service subfunction (see 7.6.4.1.2.2).
22. *Service Option Control Order:* The base station shall process the message in accordance with the requirements for the active service subfunction (see 7.6.4.1.2.2).

23. *Service Option Request Order:* The base station shall process the message in accordance with the requirements for the active service subfunction (see 7.6.4.1.2.2).

24. *Service Option Response Order:* The base station shall process the message in accordance with the requirements for the active service subfunction (see 7.6.4.1.2.2).

25. *Service Request Message:* The base station shall process the message in accordance with the requirements for the active service subfunction (see 7.6.4.1.2.2).

26. *Service Response Message:* The base station shall process the message in accordance with the requirements for the active service subfunction (see 7.6.4.1.2.2).

27. *SSD Update Confirmation Order*

28. *SSD Update Rejection Order*

29. *Status Response Message*

30. *Status Message*

31. *TMSI Assignment Completion Message*

#### 7.6.4.4 Conversation Substate

In this substate, the base station exchanges Traffic Channel frames with the mobile station in accordance with the current service configuration.

Upon entering the *Conversation Substate*, the base station shall perform the following:

- If SERV_NEG equals enabled, the call is mobile station originated and the base station sets the GRANTED_MODE field of the *Channel Assignment Message* or the *Extended Channel Assignment Message* to '10', the base station should send a *Service Connect Message* in accordance with the requirements for the active service subfunction (see 7.6.4.1.2.2).

- If SERV_NEG equals disabled and the call is mobile station originated, the base station shall process the service option request specified in the *Origination Message* in accordance with the requirements for the active service subfunction (see 7.6.4.1.2.2).

While in the *Conversation Substate*, the base station shall perform the following:

- The base station shall transmit the power control subchannel as specified in 7.1.3.1.8.

- The base station shall process Forward and Reverse Traffic Channel frames in accordance with the requirements for the active service subfunction (see 7.6.4.1.2.2).

- The base station shall perform the message acknowledgment procedures as specified in 7.6.4.1.3.

- If the base station declares a loss of Reverse Traffic Channel continuity (see 7.4.2), the base station should send a *Release Order* to the mobile station. If the base station sends a *Release Order*, the base station shall enter the *Release Substate*.
- The base station may perform Forward Traffic Channel power control as specified in 7.6.4.1.1.
- The base station may request a new service configuration by initiating service negotiation or service option negotiation in accordance with the requirements for the active service subfunction (see 7.6.4.1.2.2).
- The base station may send a *Service Option Control Message* or *Service Option Control Order* to invoke a service option specific function in accordance with the requirements for the active service subfunction (see 7.6.4.1.2.2).
- The base station may request a long code transition, as specified in 7.6.4.1.5, either autonomously or in response to a request for voice privacy specified in the *Origination Message* or *Page Response Message*.
- The base station may perform authentication procedures as specified in 7.3.1.
- The base station may perform TMSI assignment procedures (see 6.3.15).
- If the call is mobile station originated and the PACA_REORIG field of the *Origination Message* is equal to '1', the base station should send either an *Alert With Information Message* which contains a signal information record with the SIGNAL_TYPE field set to '01' or '10', or an *Alert With Information Message* which does not contain a signal information record.
- The base station may control operation of the Forward and Reverse Supplemental Code Channels by including Supplemental Code Channel assignment information in the *Supplemental Channel Assignment Message*, or the *General Handoff Direction Message*.
- The base station may send the following messages. If the base station sends a message, the base station shall comply with the specified requirements for sending the message, if any:
  1. *Alert With Information Message:* If the message contains a signal information record with the SIGNAL_TYPE field set to '01' or '10', or if the message does not contain a signal information record, the base station shall enter the *Waiting for Answer Substate*.
  2. *Analog Handoff Direction Message:* The base station shall enter the Conversation Task (see 3.6.4.4 for handoff to a wide analog channel and 3.6.5.4A of TIA/EIA/IS-91 for handoff to an 800 MHz narrow analog channel).
  3. *Audit Order*
  4. *Authentication Challenge Message*
  5. *Base Station Acknowledgment Order*
  6. *Base Station Challenge Confirmation Order*

7. *Candidate Frequency Search Request Message*
8. *Candidate Frequency Search Control Message*
9. *Continuous DTMF Tone Order*
10. *Data Burst Message*
11. *Extended Handoff Direction Message*
12. *General Handoff Direction Message*
13. *Extended Neighbor List Update Message*
14. *Flash With Information Message*
15. *In-Traffic System Parameters Message*
16. *Local Control Order*
17. *Lock Until Power-Cycled Order*
18. *Long Code Transition Request Order*
19. *Maintenance Order:* The base station shall enter the *Waiting for Answer Substate.*
20. *Maintenance Required Order*
21. *Message Encryption Mode Order*
22. *Mobile Station Registered Message*
23. *Neighbor List Update Message*
24. *Parameter Update Order* (see 6.3.12.1.3).
25. *Pilot Measurement Request Order*
26. *Power Control Message*
27. *Power Control Parameters Message*
28. *Power Up Function Message*
29. *Power Up Function Completion Message*
30. *Release Order:* The base station shall enter the *Release Substate.*
31. *Retrieve Parameters Message*
32. *Send Burst DTMF Message*
33. *Service Connect Message:* The base station shall send the message in accordance with the requirements for the active service subfunction (see 7.6.4.1.2.2).
34. *Service Option Control Message:* The base station shall send the message in accordance with the requirements for the active service subfunction (see 7.6.4.1.2.2).
35. *Service Option Control Order*

36. *Service Option Request Order*
37. *Service Option Response Order*
38. *Service Redirection Message:* The base station shall enter the *Release Substate*.
39. *Service Request Message:* The base station shall send the message in accordance with the requirements for the active service subfunction (see 7.6.4.1.2.2).
40. *Service Response Message:* The base station shall send the message in accordance with the requirements for the active service subfunction (see 7.6.4.1.2.2).
41. *Set Parameters Message*
42. *SSD Update Message*
43. *Status Request Message*
44. *Status Request Order*
45. *Supplemental Channel Assignment Message*
46. *TMSI Assignment Message*

- If the base station receives one of the following messages from the mobile station, the base station shall process the message according to the specified requirements, if any:

1. *Base Station Challenge Order:* The base station shall process the message as described in 6.3.12.1.9.
2. *Candidate Frequency Search Report Message*: The base station shall process the message as described in 7.6.6.2.2.6.
3. *Candidate Frequency Search Response Message*: The base station shall process the message as described in 7.6.6.2.2.4.
4. *Continuous DTMF Tone Order*
5. *Data Burst Message*
6. *Flash With Information Message*
7. *Handoff Completion Message:* The base station shall process the message as described in 7.6.6.2.2.7.
8. *Long Code Transition Request Order:* The base station shall process the message as described in 7.6.4.1.5.
9. *Mobile Station Acknowledgment Order*
10. *Mobile Station Reject Order*
11. *Origination Continuation Message*
12. *Parameters Response Message*
13. *Parameter Update Confirmation Order*

14. *Pilot Strength Measurement Message:* The base station shall process the message as described in 7.6.6.2.2.1.

15. *Power Measurement Report Message:* The base station may process the message as described in 7.6.4.1.1.

16. *Release Order:* The base station shall send the mobile station a *Release Order* within $T_{2b}$ seconds and enter the *Release* Substate; otherwise, the base station shall send an *Alert with Information Message*, within $T_{2b}$ seconds, and enter the *Waiting for Answer Substate*.

17. *Request Analog Service Order:* The base station may respond with an *Analog Handoff Direction Message.*

18. *Request Narrow Analog Service Order:* The base station may respond with an *Analog Handoff Direction Message.*

19. *Request Wide Analog Service Order:* The base station may respond with an *Analog Handoff Direction Message.*

20. *Send Burst DTMF Message*

21. *Service Connect Completion Message:* The base station shall process the message in accordance with the requirements for the active service subfunction (see 7.6.4.1.2.2).

22. *Service Option Control Message:* The base station shall process the message in accordance with the requirements for the active service subfunction (see 7.6.4.1.2.2).

23. *Service Option Control Order:* The base station shall process the message in accordance with the requirements for the active service subfunction (see 7.6.4.1.2.2).

24. *Service Option Request Order:* The base station shall process the message in accordance with the requirements for the active service subfunction (see 7.6.4.1.2.2).

25. *Service Option Response Order:* The base station shall process the message in accordance with the requirements for the active service subfunction (see 7.6.4.1.2.2).

26. *Service Request Message:* The base station shall process the message in accordance with the requirements for the active service subfunction (see 7.6.4.1.2.2).

27. *Service Response Message:* The base station shall process the message in accordance with the requirements for the active service subfunction (see 7.6.4.1.2.2).

28. *SSD Update Confirmation Order*

29. *SSD Update Rejection Order*

30. *Status Response Message*

31. *Status Message*

32. *Supplemental Channel Request Message:* The base station may respond with a *Supplemental Channel Assignment Message*.

33. *TMSI Assignment Completion Message*

7.6.4.5 Release Substate

In this substate, the base station disconnects the call.

While in the *Release Substate*, the base station shall perform the following:

- The base station shall transmit the power control subchannel as specified in 7.1.3.1.8.
- The base station shall transmit on the Forward Traffic Channel for at least $T_{3b}$ seconds. The base station shall transmit null Traffic Channel data, except when transmitting signaling traffic. After $T_{3b}$ seconds, the base station should stop transmitting on the Forward Traffic Channel.
- The base station shall process Reverse Traffic Channel signaling traffic and may discard other types of Reverse Traffic Channel traffic.
- The base station shall perform the message acknowledgment procedures as specified in 7.6.4.1.3.
- The base station may perform TMSI assignment procedures (see 6.3.15).
- The base station may perform Forward Traffic Channel power control as specified in 7.6.4.1.1.
- The base station may send a *Service Option Control Message* to invoke a service option specific function in accordance with the requirements for the active service subfunction (see 7.6.4.1.2.2).
- The base station may send the following messages. If the base station sends a message, the base station shall comply with the specified requirements for sending the message, if any.

1. *Alert With Information Message:* If the message contains a signal information record with the SIGNAL_TYPE field set to '01' or '10', or if the message does not contain a signal information record, the base station shall enter the *Waiting for Answer Substate*.
2. *Audit Order*
3. *Base Station Acknowledgment Order*
4. *Candidate Frequency Search Request Message*
5. *Candidate Frequency Search Control Message*
6. *Data Burst Message*
7. *Extended Handoff Direction Message*
8. *General Handoff Direction Message*

9. *Extended Neighbor List Update Message*
10. *In-Traffic System Parameters Message*
11. *Local Control Order*
12. *Lock Until Power-Cycled Order*
13. *Maintenance Order:* The base station shall enter the *Waiting for Answer Substate*.
14. *Maintenance Required Order*
15. *Mobile Station Registered Message*
16. *Neighbor List Update Message*
17. *Parameter Update Order* (see 6.3.12.1.3).
18. *Power Control Message*
19. *Power Control Parameters Message*
20. *Power Up Function Message*
21. *Power Up Function Completion Message*
23. *Release Order*
23. *Retrieve Parameters Message*
24. *Service Option Control Message:* The base station shall send the message in accordance with the requirements for the active service subfunction (see 7.6.4.1.2.2).
25. *Service Option Control Order*
26. *Status Request Message*
27. *Status Request Order*
28. *Supplemental Channel Assignment Message*
29. *TMSI Assignment Message*

- If the base station receives one of the following messages from the mobile station, the base station shall process the message according to the specified requirements, if any:

  1. *Base Station Challenge Order:* The base station shall process the message as described in 6.3.12.1.9.
  2. *Candidate Frequency Search Report Message*: The base station shall process the message as described in 7.6.6.2.2.6.
  3. *Candidate Frequency Search Response Message*: The base station shall process the message as described in 7.6.6.2.2.4.
  4. *Connect Order*
  5. *Continuous DTMF Tone Order*

6. *Data Burst Message*
7. *Flash With Information Message*
8. *Handoff Completion Message:* The base station shall process the message as described in 7.6.6.2.2.7.
9. *Long Code Transition Request Order*
10. *Mobile Station Acknowledgment Order*
11. *Mobile Station Reject Order*
12. *Origination Continuation Message*
13. *Parameter Update Confirmation Order*
14. *Parameters Response Message*
15. *Pilot Strength Measurement Message*
16. *Power Measurement Report Message*
17. *Release Order*
18. *Request Analog Service Order*
19. *Request Narrow Analog Service Order*
20. *Request Wide Analog Service Order*
21. *Send Burst DTMF Message*
22. *Service Connect Completion Message*
23. *Service Option Control Message:* The base station shall process the message in accordance with the requirements for the active service subfunction (see 7.6.4.1.2.2).
24. *Service Option Control Order*
25. *Service Option Request Order*
26. *Service Option Response Order*
27. *Service Request Message*
28. *Service Response Message:*
29. *SSD Update Confirmation Order*
30. *SSD Update Rejection Order*
31. *Status Response Message*
32. *Status Message*
33. *TMSI Assignment Completion Message*

### 7.6.5 Registration

Registration is the process by which a mobile station notifies the base station of its location, status, identification, slot cycle, and other characteristics. The base station can make use of location information to efficiently page the mobile station when establishing a mobile station terminated call. Registration also provides the mobile station's SLOT_CYCLE_INDEX parameter so that the base station can determine which Paging Channel slots a mobile station operating in the slotted mode is monitoring. Registration also provides the protocol revision number so that the base station knows the capabilities of the mobile station.

The CDMA system supports nine different forms of registration:

1. Power-up registration. The mobile station registers when it powers on or switches from using the analog system.
2. Power-down registration. The mobile station registers when it powers off if previously registered in the current serving system.
3. Timer-based registration. The mobile station registers when a timer expires.
4. Distance-based registration. The mobile station registers when the distance between the current base station and the base station in which it last registered exceeds a threshold.
5. Zone-based registration. The mobile station registers when it enters a new zone.
6. Parameter-change registration. The mobile station registers when certain of its stored parameters change or when it enters a new system.
7. Ordered registration. The mobile station registers when the base station requests it.
8. Implicit registration. When a mobile station successfully sends an *Origination Message* or *Page Response Message*, the base station can infer the mobile station's location. This is considered an implicit registration.
9. Traffic Channel registration. Whenever the base station has registration information for a mobile station that has been assigned to a Traffic Channel, the base station can notify the mobile station that it is registered.

The first five forms of registration, as a group, are called autonomous registration and are conditioned, in part, by roaming status and by indicators contained in the *System Parameters Message* (see 6.6.5.3). The base station may initiate ordered registration through the *Registration Order*.

The base station can obtain registration information by sending the *Status Request Message* to the mobile station on either the Paging Channel or the Forward Traffic Channel. If the base station is operating with the mobile station in Band Class 0, the base station can also obtain registration information by sending the *Status Request Order* to the mobile station on the Forward Traffic Channel. The base station may notify the mobile station that it is registered through the *Mobile Station Registered Message*.

#### 7.6.5.1 Registration on the Paging and Access Channels

The base station shall specify the forms of registration that are enabled, the corresponding registration parameters, and the roaming status conditions for which registration is enabled in the *System Parameters Message*. If any of the autonomous registration forms are enabled, the base station should also enable parameter-change registration.

The base station should process an *Origination Message* or *Page Response Message* sent on the Access Channel as an implicit registration of the mobile station sending the message. The base station can obtain complete registration information about the mobile station at any time by sending a *Registration Request Order* to the mobile station.

#### 7.6.5.2 Registration on the Traffic Channels

The base station can obtain registration information from a mobile station on the Traffic Channel by means of the *Status Request Message* or the *Status Request Order*. When the base station has registration information for a mobile station, the base station may send a *Mobile Station Registered Message* to the mobile station, specifying the base station's registration system, zone, and location information.

### 7.6.6 Handoff Procedures

#### 7.6.6.1 Overview

##### 7.6.6.1.1 Types of Handoff

The base station supports the following three handoff procedures:

- *Soft Handoff*: A handoff in which a new base station commences communications with the mobile station without interrupting the communications with the old base station. The base station[11] can direct the mobile station to perform a soft handoff only when all Forward Traffic Channels assigned to the mobile station have identical band classes, frequency assignments and frame offsets. Soft handoff provides diversity of Forward Traffic Channels and Reverse Traffic Channel paths on the boundaries between base stations.
- *CDMA-to-CDMA Hard Handoff*: A handoff in which the base station directs the mobile station to transition between disjoint sets of base stations, different band classes, different frequency assignments, or different frame offsets.
- *CDMA-to-Analog Handoff*: A handoff in which the base station directs the mobile station from a Forward Traffic Channel to an analog voice channel.

Base station support of CDMA-to-CDMA hard handoff between different band classes and support of CDMA-to-analog handoff is optional.

Section 6.6.6 describes the mobile station requirements during handoff.

[11] In this section the term base station may imply multiple cells or sectors.

7.6.6.1.2 Active Set

The Active Set contains the pilots (see 6.6.6.1.2) associated with the Forward Traffic Channels assigned to the mobile station. Initially the base station informs the mobile station of the contents of the Active Set using the *Channel Assignment Message* or the *Extended Channel Assignment Message;* subsequent changes to the contents of the Active Set are provided using the *Extended Handoff Direction Message* or *General Handoff Direction Message.*

7.6.6.2 Requirements

7.6.6.2.1 Overhead Information

The base station sends the following messages governing the pilot search procedures performed by the mobile station:

- *System Parameters Message*
- *In-Traffic System Parameters Message*
- *Neighbor List Message*
- *Extended Neighbor List Message*
- *Neighbor List Update Message*
- *Extended Neighbor List Update Message*
- *General Neighbor List Message*
- *General Handoff Direction Message*
- *Extended Handoff Direction Message*
- *Candidate Frequency Search Request Message*
- *Candidate Frequency Search Control Message*

7.6.6.2.1.1 System Parameters

The base station sends handoff related parameters on the Paging Channel in the *System Parameters Message* and the *Extended System Parameters Message.*

The base station may revise handoff related parameters for a mobile station operating on the Traffic Channel by sending the *In-Traffic System Parameters Message.*

The base station may modify the values of the parameters SRCH_WIN_A, T_ADD, T_DROP, T_COMP, and T_TDROP through the *Extended Handoff Direction Message* or the *General Handoff Direction Message.* In addition, the base station may also modify the values of the parameters SRCH_WIN_N, SRCH_WIN_R, SOFT_SLOPE, ADD_INTERCEPT, and DROP_INTERCEPT through the *General Handoff Direction Message.*

7.6.6.2.1.2 Neighbor List

The base station sends a Neighbor List on the Paging Channel in the *Neighbor List Message,* the *Extended Neighbor List Message,* or the *General Neighbor List Message.* The base

station should list the pilots in the *Neighbor List Message* in descending priority order (see 6.6.6.2.6.3).

The base station may revise the Neighbor List for a mobile station operating on the Traffic Channel by sending a *Neighbor List Update Message* or an *Extended Neighbor List Update Message*.

The base station shall not include a pilot that is a member of the mobile station's Active Set in a *Neighbor List Update Message* or an *Extended Neighbor List Update Message*. The base station shall not specify more than $N_{8m}$ pilots in the *Neighbor List Message*, *Extended Neighbor List Message*, *General Neighbor List Message*, or in the *Extended Neighbor List Update Message*. The base station shall not specify more than 20 pilots in the *Neighbor List Update Message*. The base station should list the pilots in the *Neighbor List Update Message* in descending priority order (see 6.6.6.2.6.3).

The base station may also indicate the availability of neighboring analog systems in the *General Neighbor List Message* to assist the mobile station in performing system reselection (see 6.6.2.1.6).

7.6.6.2.1.3 Candidate Frequency Neighbor List

The base station sends a Candidate Frequency Neighbor List and inter-frequency hard handoff related parameters in the *Candidate Frequency Search Request Message*. The base station shall not specify more than $N_{8m}$ pilots in the *Candidate Frequency Search Request Message*.

7.6.6.2.1.4 Candidate Frequency Search List

The base station designates a subset of the Candidate Frequency Neighbor List included in the *Candidate Frequency Search Request Message* as the Candidate Frequency Search List. For each pilot belonging to the Candidate Frequency Search List, the base station shall set the corresponding SEARCH_SET field of the *Candidate Frequency Search Request Message* to '1'.

7.6.6.2.2 Call Processing During Handoff

7.6.6.2.2.1 Processing the Pilot Strength Measurement Message

The base station should use the pilot strength measurements in the *Pilot Strength Measurement Message* to determine a new Active Set.

The base station may also use the PN phase measurements in the *Pilot Strength Measurement Message* to estimate the propagation delay to the mobile station. This estimate can be used to reduce Reverse Traffic Channel acquisition time.

The base station may respond to a *Pilot Strength Measurement Message* received from the mobile station by sending the *Extended Handoff Direction Message* or the *General Handoff Direction Message*

7.6.6.2.2.2 Processing the Extended Handoff Direction Message

The base station shall maintain a handoff message sequence number. The sequence number shall be initialized to zero prior to the transmission of the first *Extended Handoff Direction Message* or *General Handoff Direction Message* (see 7.6.6.2.2.10) to the mobile station. The base station shall increment the sequence number modulo 4 each time the base station modifies the pilot list (including the order in which pilots are specified within the list) or the code channels (including a change in the ordering such that the first code channel occurrence for any pilot is changed) sent to the mobile station in an *Extended Handoff Direction Message* or a *General Handoff Direction Message*.

Following a hard handoff, the base station should set the handoff sequence number to the value of the LAST_HDM_SEQ field of the *Handoff Completion Message* and should use the pilot order contained in the *Handoff Completion Message* to interpret the contents of subsequent *Power Measurement Report Messages*.

The base station shall set the contents of an *Extended Handoff Direction Message* according to the following rules:

- An *Extended Handoff Direction Message* shall list no more than $N_{6m}$ pilots in the new Active Set.
- An *Extended Handoff Direction Message* shall identify the identical power control subchannels (i.e., those carrying identical power control bits).
- An *Extended Handoff Direction Message* may change the code channel associated with an Active Set pilot that remains in the new Active Set.
- The base station specifies the long code mask to be used on the new Forward Traffic Channel by using the PRIVATE_LCM field of the *Extended Handoff Direction Message*. The base station may change the long code mask to be used on the new Forward Traffic Channel via the PRIVATE_LCM field of the *Extended Handoff Direction Message* only for CDMA-to-CDMA hard handoffs. If a change of long code mask is specified and the base station does not specify an explicit action time in the *Extended Handoff Direction Message*, the base station shall begin using the new long code mask on the first 80 ms boundary (relative to System Time) occurring at least 80 ms after the end of the frame containing the last bit of the message.
- For CDMA-to-CDMA handoffs, the base station may require the mobile station to perform a reset of the acknowledgment procedures by using the RESET_L2 field of the *Extended Handoff Direction Message*. If the base station requires the mobile station to reset the acknowledgment procedures, the base station shall also reset the acknowledgment procedures, as specified in 7.6.4.1.3.3. The acknowledgment procedures shall be reset immediately after the action time of the *Extended Handoff Direction Message*.

- For CDMA-to-CDMA hard handoffs, the base station may alter the frame offset by setting the FRAME_OFFSET field to a new value. If the base station specifies a new frame offset and does not specify an explicit action time, the base station shall change its Forward and Reverse Traffic Channel frame offsets at the second 80 ms boundary (relative to System Time) after the end of transmission of the *Extended Handoff Direction Message*, unless the end of transmission of the message coincides with an 80 ms boundary, in which case the change in frame offsets shall occur 80 ms after the end of transmission.
- For CDMA-to-CDMA hard handoffs to Band Class 0, the base station may alter the nominal transmit power offset after handoff by setting the NOM_PWR field to the new nominal transmit power offset. For CDMA-to-CDMA hard handoffs to Band Class 1, the base station may alter the nominal transmit power offset after handoff by setting both the NOM_PWR and NOM_PWR_EXT fields to the new nominal transmit power offset.
- The base station may specify a different band class by setting the BAND_CLASS and CDMA_FREQ fields to the band class and CDMA frequency assignment respectively. The base station shall not specify a band class not supported by the mobile station.
- If the base station sends the *Extended Handoff Direction Message* as a message requiring acknowledgment (see 7.6.4.1.3.1), the base station should set the action time of the message such that there is sufficient time for the mobile station to transmit a message containing the acknowledgment prior to the action time.
- For CDMA-to-CDMA hard handoffs, the base station may specify whether the mobile station is to use service negotiation or service option negotiation by setting the SERV_NEG_TYPE field of the *Extended Handoff Direction Message*. If the base station specifies that the mobile station is to use service negotiation, the base station shall set the SERV_NEG variable (see 7.6.4.1.2.1.4) to enabled at the action time of message. If the base station specifies that the mobile station is to use service option negotiation, the base station shall set SERV_NEG to disabled at the action time of the message.

7.6.6.2.2.3 Processing the Candidate Frequency Search Request Message

The base station may send a *Candidate Frequency Search Request Message* to direct the mobile station to perform a single or periodic search on the Candidate Frequency.

The base station shall maintain a search message sequence number. The sequence number shall be initialized to zero prior to the transmission of the first *Candidate Frequency Search Request Message* to the mobile station. Each time the base station sends a new *Candidate Frequency Search Request Message* to the mobile station, it shall set the CFSRM_SEQ field to the current value of the sequence number, and increment the sequence number modulo 4.

7.6.6.2.2.4 Processing the Candidate Frequency Search Response Message

The base station should use the mobile station's search capabilities as reported in the *Candidate Frequency Search Response Message* to determine an appropriate period for the mobile station's periodic search on the Candidate Frequency.

7.6.6.2.2.5 Processing the Candidate Frequency Search Control Message

The base station may send a *Candidate Frequency Search Control Message* to direct the mobile station to perform a single search, or to start or stop a periodic search on the Candidate Frequency.

Each time the base station sends a new *Candidate Frequency Search Control Message* to the mobile station, it shall set the CFSCM_SEQ field to the current value of the sequence number, and increment the sequence number modulo 4.

7.6.6.2.2.6 Processing the Candidate Frequency Search Report Message

The base station should use the value of the LAST_SRCH_MSG field and of the LAST_SRCH_MSG_SEQ field of the *Candidate Frequency Search Report Message* to interpret the contents of the message.

If the SEARCH_MODE field of the *Candidate Frequency Search Report Message* is equal to '0000', the base station should use the pilot strength measurements in the message to determine whether to direct the mobile station to perform a CDMA-to-CDMA inter-frequency handoff, and the Active Set to be used in the handoff. If the SEARCH_MODE field of the *Candidate Frequency Search Report Message* is equal to '0001', the base station should use the analog frequency strength measurements in the message to determine whether to direct the mobile station to perform a CDMA-to-Analog handoff.

7.6.6.2.2.7 Transmitting During Handoff

The base station shall continue transmission to the mobile station on the Fundamental Code Channel of a Forward Traffic Channel removed from the Active Set until it receives the *Handoff Completion Message* from the mobile station or determines that the call has been released.

The base station should discontinue transmission to the mobile station on the Fundamental Code Channel of a Forward Traffic Channel removed from the Active Set after it receives the *Handoff Completion Message*.

For Forward Multiplex Options 3 through 16, the base station should discontinue transmission of Forward Supplemental Code Channels removed from the Code Channel List according to the following rules:

- If a *General Handoff Direction Message* is used to remove one or more Forward Supplemental Code Channels, the base station should discontinue transmission on those code channels no later than the action time of the *General Handoff Direction Message*.

- If a *Supplemental Channel Assignment Message* is used to remove one or more Forward Supplemental Code Channels, the base station should discontinue transmission on those Forward Supplemental Code Channels no later than the implicit action time of the *Supplemental Channel Assignment Message*.

7.6.6.2.2.8 Ordering Pilot Measurements From the Mobile Station

The base station may direct the mobile station to send a *Pilot Strength Measurement Message* by sending a *Pilot Measurement Request Order*.

7.6.6.2.2.9 Processing the Supplemental Channel Assignment Message

The base station may use this message to specify Supplemental Code Channel assignment parameters for the mobile station's Forward Traffic Channel, Reverse Traffic Channel, or both. This information includes the parameters that control the timing of the Supplemental Code Channel assignment (e.g., starting time and duration), and parameters that control the number of Supplemental Code Channels which will be used during the assignment (e.g., the number of Reverse Supplemental Code Channels on which the mobile station may transmit and the set of Walsh codes on which the mobile station receives Forward Supplemental Code Channels for each pilot in the mobile station's Active Set). The *Supplemental Channel Assignment Message* shall be used only with Multiplex Options 3 through 16.

The base station shall set the content of a *Supplemental Channel Assignment Message* according to the following rules:

- The base station may set USE_RETRY_DELAY to '1' and RETRY_DELAY to a delay in 320 ms units starting at the next 80 ms system time boundary during which the mobile station is to refrain from sending subsequent *Supplemental Channel Request Messages*. The base station may set RETRY_DELAY to '11111111' to indicate that the mobile station is to refrain from transmitting *Supplemental Channel Request Messages* indefinitely. Otherwise, the base station shall set USE_RETRY_DELAY to '0' and omit RETRY_DELAY in which case the mobile station is to reset any previously set RETRY_DELAY indication.
- The base station shall set REV_DTX_DURATION to the maximum duration of time in units of 20 ms that the mobile station is allowed to stop transmission on a Reverse Supplemental Code Channel before resuming transmission on the Reverse Supplemental Code Channel within the reverse assignment duration. The base station shall set this field to '0000' if the mobile station is to stop using a Reverse Supplemental Code Channel once it has stopped transmitting on that Reverse Supplemental Channel. The base station shall set this field to '1111' if the mobile station is allowed to resume transmission on a Reverse Supplemental Code Channel at any time within the reverse assignment duration.
- A *Supplemental Channel Assignment Message* may specify Reverse Supplemental Code Channel assignments. If Reverse Supplemental Code Channel assignment information is included, the base station shall set REV_INCLUDED to '1' and include the appropriate Reverse Supplemental Code Channel assignment information. Otherwise, the base station shall set REV_INCLUDED to '0'.

- The base station shall indicate the implicit, explicit, or linked start time for a Reverse Supplemental Code Channel assignment as follows:
  - The base station may set EXPL_REV_START_TIME to '1' and set REV_START_TIME to the System Time, in units of 80 ms (modulo 64), at which the mobile station is to start transmitting on the Reverse Supplemental Code Channels.
  - The base station may set USE_REV_HDM_SEQ to '1' and set REV_LINKED_HDM_SEQ to the sequence number of the *General Handoff Direction Message* (HDM_SEQ) with which this message is linked to indicate that the mobile station is to start processing the Reverse Supplemental Code Channels at the action time of the linked *General Handoff Direction Message*.
  - The base station may set EXPL_REV_START_TIME to '0' and USE_REV_HDM_SEQ to '0' to indicate that the mobile station is to start processing Reverse Supplemental Code Channels at the implicit action time of this message.
  - The base station shall not set both EXPL_REV_START_TIME and USE_REV_HDM_SEQ to '1'.
- The base station may set USE_REV_DURATION to '1' and REV_DURATION to the time interval, in units of 80 ms, after the implicit, explicit, or linked action time for the message (as specified in 6.6.6.2.5.1), during which the mobile station is to transmit on the specified Reverse Supplemental Code Channels. The base station may set USE_REV_DURATION to '0' to indicate an infinite duration for the assignment of Reverse Supplemental Code Channels. If NUM_REV_CODES is '000', then the base station shall set USE_REV_DURATION to '0'.
- If Reverse Supplemental Code Channel assignment information is included, the base station shall set NUM_REV_CODES to the number of Reverse Supplemental Code Channels to be used in this Reverse Supplemental Code Channel assignment. The base station shall not set NUM_REV_CODES to be greater than the number of codes supported by the currently negotiated multiplex option.
- The base station may set USE_T_ADD_ABORT, the Reverse Supplemental Code Channel assignment T_ADD abort indicator, to '1' to indicate that the mobile station is to abort Reverse Supplemental Code Channel assignments implicitly when a T_ADD trigger occurs. Otherwise, the base station shall set USE_T_ADD_ABORT to '0'. If NUM_REV_CODES is set to '000', the base station shall set USE_T_ADD_ABORT to '0'.
- If the base station is sending this message in response to a *Supplemental Channel Request Message* which includes a *Supplemental Channel Request Message* sequence number, the base station may set USE_SCRM_SEQ_NUM to '1' and include and set USE_SCRM_SEQ_NUM to the sequence number corresponding to the SCRM_SEQ_NUM field in a *Supplemental Channel Request Message* to which the mobile station is to match this message. Otherwise, the base station shall set USE_SCRM_SEQ_NUM to '0' and omit SCRM_SEQ_NUM.

- A *Supplemental Channel Assignment Message* may specify Forward Supplemental Code Channel assignments. If Forward Supplemental Code Channel assignment information is included, the base station shall set FOR_INCLUDED to '1' and include the appropriate Forward Supplemental Code Channel assignment information. Otherwise, FOR_INCLUDED shall be set to '0'.
- The base station shall set FOR_SUP_CONFIG to '00' if the mobile station is to stop processing the forward supplemental code after the action time of the *Supplemental Channel Assignment Message*. The base station should not transmit to the mobile station on the Forward Supplemental Code Channels after the message takes effect.
- The base station shall set FOR_SUP_CONFIG to '01' if the mobile station is to start processing the Forward Supplemental Code Channels in the Code Channel List at the implicit, explicit, or linked action time for the message as specified in 6.6.6.2.5.1.
- The base station shall set FOR_SUP_CONFIG to '10' if the Forward Supplemental Code Channels associated with the pilots in the Active set are specified in the *Supplemental Channel Assignment Message* and is to stop processing Forward Supplemental Code Channels at the implicit action time of the message. The base station should not transmit to the mobile station on the Forward Supplemental Code Channels after the message takes effect.
- The base station shall set FOR_SUP_CONFIG to '11' if the Forward Supplemental Code Channels associated with the pilots in the Active set are specified in the *Supplemental Channel Assignment Message* and the mobile station is to start processing the Forward Supplemental Code Channels at the implicit, explicit, or linked action time for the message as specified in 6.6.6.2.5.1.
- The base station shall set FOR_DURATION to the time interval, in units of 80 ms, after the implicit, explicit, or linked action time for the message (as specified in 6.6.6.2.5.1), during which the mobile station is to process the specified Forward Supplemental Code Channels. The base station may set USE_FOR_DURATION to '0' to indicate an infinite duration for the allocation of Forward Supplemental Code Channels. The base station should not transmit to the mobile station on the Forward Supplemental Code Channels outside the time interval specified by FOR_DURATION.
- The base station may set EXPL_FOR_START_TIME to '1' and set FOR_START_TIME to the System Time, in units of 80 ms (modulo 64), at which the mobile station is to start processing the Forward Supplemental Code Channels.
- The base station may set USE_FOR_HDM_SEQ to '1' and set FOR_LINKED_HDM_SEQ to the sequence number of the *General Handoff Direction Message* (HDM_SEQ) with which this message is linked to indicate that the mobile station is to start processing the Forward Supplemental Code Channels at the action time of the linked *General Handoff Direction Message*.
- The base station shall not set both USE_FOR_HDM_SEQ and EXPL_FOR_START_TIME within a *Supplemental Channel Assignment Message* to '1'.

- The number of Supplemental Code Channels assigned by *Supplemental Channel Assignment Message* shall not exceed the maximum number of Supplemental Code Channels for the negotiated Forward Multiplex Option.
- The base station may set EXPL_FOR_START_TIME to '0' and USE_FOR_HDM_SEQ to '0' to indicate that the mobile station is to start processing Forward Supplemental Code Channels at the implicit action time of this message.

7.6.6.2.2.10 Processing the General Handoff Direction Message

The base station shall maintain a handoff message sequence number. The sequence number shall be initialized to zero prior to the transmission of the first *Extended Handoff Direction Message* or *General Handoff Direction Message* to the mobile station (see 7.6.6.2.2.2). The base station shall increment the sequence number modulo 4 each time the base station modifies the pilot list (including the order in which pilots are specified within the list) or the code channels (including a change in the ordering such that the first code channel occurrence for any pilot is changed) sent to the mobile station in an *Extended Handoff Direction Message* or a *General Handoff Direction Message*

Following a hard handoff, the base station should set the handoff message sequence number to the value of the LAST_HDM_SEQ field of the *Handoff Completion Message* and should use the pilot order contained in the *Handoff Completion Message* to interpret the contents of subsequent *Power Measurement Report Messages*.

The base station shall set the contents of a *General Handoff Direction Message* according to the following rules:

- A *General Handoff Direction Message* shall list no more than $N_{6m}$ pilots in the new Active Set.
- The base station may include a Service Configuration Information Record in the *General Handoff Direction Message* to accept a service configuration proposed in a *Service Request Message* or *Service Response Message*, and instruct the mobile station to begin using the service configuration.
- A *General Handoff Direction Message* shall identify the identical power control subchannels (i.e., those carrying identical power control bits).
- A *General Handoff Direction Message* may change the code channel associated with an Active Set pilot that remains in the new Active Set.
- The base station specifies the long code mask to be used on the new Forward Traffic Channel by using the PRIVATE_LCM field of the *General Handoff Direction Message*. The base station may change the contents of this field only for CDMA-to-CDMA hard handoffs. If a change of long code mask is specified and the base station does not specify an explicit action time in the *General Handoff Direction Message*, the base station shall begin using the new long code mask on the first 80 ms boundary (relative to System Time) occurring at least 80 ms after the end of the frame containing the last bit of the message.

- For CDMA-to-CDMA handoffs, the base station may require the mobile station to perform a reset of the acknowledgment procedures by using the RESET_L2 field of the *General Handoff Direction Message*. If the base station requires the mobile station to reset the acknowledgment procedures, the base station shall also reset the acknowledgment procedures, as specified in 7.6.4.1.3.3. The acknowledgment procedures shall be reset immediately after the action time of the *General Handoff Direction Message*.
- For CDMA-to-CDMA hard handoffs, the base station may alter the frame offset by setting the FRAME_OFFSET field to a new value. If the base station specifies a new frame offset and does not specify an explicit action time, the base station shall change its Forward and Reverse Traffic Channel frame offsets at the second 80 ms boundary (relative to System Time) after the end of transmission of the *General Handoff Direction Message*, unless the end of transmission of the message coincides with an 80 ms boundary, in which case the change in frame offsets shall occur 80 ms after the end of transmission.
- For CDMA-to-CDMA hard handoffs to Band Class 0, the base station may alter the nominal transmit power offset after handoff by setting the NOM_PWR field to the new nominal transmit power offset. For CDMA-to-CDMA hard handoffs to Band Class 1, the base station may alter the nominal transmit power offset after handoff by setting both the NOM_PWR and NOM_PWR_EXT fields to the new nominal transmit power offset.
- The base station may specify a different band class by setting the BAND_CLASS and CDMA_FREQ fields to the band class and CDMA frequency assignment respectively. The base station shall not specify a band class not supported by the mobile station.
- If the base station sends the *General Handoff Direction Message* as a message requiring acknowledgment (see 7.6.4.1.3.1), the base station should set the action time of the message such that there is sufficient time for the mobile station to transmit a message containing the acknowledgment prior to the action time.
- For CDMA-to-CDMA hard handoffs, the base station may specify whether the mobile station is to use service negotiation or service option negotiation by setting the SERV_NEG_TYPE field of the *General Handoff Direction Message*. If the base station specifies that the mobile station is to use service negotiation, the base station shall set the SERV_NEG variable (see 7.6.4.1.2.1.4) to enabled at the action time of message. If the base station specifies that the mobile station is to use service option negotiation, the base station shall set SERV_NEG to disabled at the action time of the message.

- The base station may specify whether the mobile station is to restore its configuration to what it was before the handoff attempt, if it fails in the handoff attempt using criteria specified in the *Candidate Frequency Search Request Message*, by using the RETURN_IF_HANDOFF_FAIL field of the *General Handoff Direction Message*. The base station may specify whether the mobile station is to periodically search a CDMA Candidate Frequency for useable pilots, using criteria specified in the *Candidate Frequency Search Request Message*, by using the PERIODIC_SEARCH field of the *General Handoff Direction Message*.
- The base station may include Forward Supplemental Code Channel assignment information in the *General Handoff Direction Message* if the Forward Multiplex Option for the currently connected service option is 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, or 16. If Forward Supplemental Code Channel assignment information is included, the base station shall include FOR_INCLUDED, set FOR_INCLUDED to '1', and include the appropriate Forward Supplemental Code Channel assignment information.
- The number of Forward Supplemental Code Channels assigned by the *General Handoff Direction Message* shall not exceed the maximum number of Forward Supplemental Code Channels for the negotiated Forward Multiplex Option.
- The base station shall set FOR_SUP_CONFIG to '00' if the mobile station is to stop processing the Forward Supplemental Code Channel after the action time of *General Handoff Direction Message*. The base station should not transmit to the mobile station on the Forward Supplemental Code Channels after the message takes effect.
- The base station shall set FOR_SUP_CONFIG to '01' if the mobile station is to start processing the Forward Supplemental Code Channels in the Code Channel List at the action time of the message.
- The base station shall set FOR_SUP_CONFIG to '10' if the Forward Supplemental Code Channels associated with the pilots in the Active set are specified in the *General Handoff Direction Message* and the mobile station is to stop processing Forward Supplemental Code Channels at the implicit action time of the message. The base station should not transmit to the mobile station on the Forward Supplemental Code Channels after the message takes effect.
- The base station shall set FOR_SUP_CONFIG to '11' if the Forward Supplemental Code Channels associated with the pilots in the Active set are specified in the *General Handoff Direction Message* and the mobile station is to start processing the Forward Supplemental Code Channels at the action time of the message.
- The base station shall set FOR_DURATION to the time interval after the action time of the message, in units of 80 ms, during which the mobile station is to process the specified Forward Supplemental Code Channels. The base station may set USE_FOR_DURATION to '0' to indicate an infinite duration for the allocation of Forward Supplemental Code Channels. The base station should not transmit to the mobile station on the Forward Supplemental Code Channels outside the time interval specified by FOR_DURATION.

- If FOR_INCLUDED is included in the message, the base station shall include EXPL_CODE_CHAN for each pilot included in the message. If EXPL_CODE_CHAN is included and set to '1' for a pilot, the code channels associated with the pilot in the *General Handoff Direction Message* shall be ordered such that the first code channel occurrence is associated with the Forward Fundamental Code Channel and the successive occurrences are associated with Forward Supplemental Code Channels. If EXPL_CODE_CHAN is included and is set to '0', for each pilot in the new Active Set, the base station shall include BASE_CODE_CHAN and set it to the base code channel index in the range of 1 to (63 - NUM_FOR_SUP + 1), inclusive, that the mobile station is to use as the first Forward Supplemental Code Channel associated with this pilot. The mobile station is to use NUM_FOR_SUP adjacent code channels beginning with index BASE_CODE_CHAN (i.e., BASE_CODE_CHAN through BASE_CODE_CHAN + NUM_FOR_SUP - 1) for the Forward Supplemental Code Channels associated with this pilot.

- The base station may include Reverse Supplemental Code Channel assignment information in the *General Handoff Direction Message* if the Reverse Multiplex Option is 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, or 16. If Reverse Supplemental Code Channel assignment information is included, the base station shall include REV_INCLUDED, set REV_INCLUDED to '1', and include the appropriate Reverse Supplemental Code Channel assignment information in the additional fields.

- If Reverse Supplemental Code Channel assignment information is included, the base station shall set NUM_REV_CODES to the number of Reverse Supplemental Code Channels to be used by the mobile station. The base station shall not set NUM_REV_CODES to be greater than the number of codes supported by the currently negotiated multiplex option.

- The base station may set USE_T_ADD_ABORT, the Reverse Supplemental Code Channel assignment T_ADD abort indicator, to '1' to indicate that the mobile station is to abort Reverse Supplemental Code Channel assignments implicitly when a T_ADD trigger occurs. Otherwise, the base station shall set USE_T_ADD_ABORT to '0'. If NUM_REV_CODES is set to '000', the base station shall set USE_T_ADD_ABORT to '0'.

- The base station shall set REV_DTX_DURATION to the maximum duration of time in units of 20 ms that the mobile station is allowed to stop transmission on a Reverse Supplemental Code Channel before resuming transmission on the Reverse Supplemental Code Channel. The base station shall set this field to '0000' if the mobile station is to stop using a Reverse Supplemental Code Channel once it has stopped transmitting on that Reverse Supplemental Channel. The base station shall set this field to '1111' if the mobile station is allowed to resume transmission on a Reverse Supplemental Code Channel at any time within the reverse assignment duration.

- The base station may set CLEAR_RETRY_DELAY to '1' to indicate that the mobile station is to cancel any previously stored retry delay. Otherwise, the base station shall set CLEAR_RETRY_DELAY to '0' to indicate that the mobile station is to continue to honor any previously stored retry delay (see 6.6.6.2.5.1).

- The base station may indicate a duration for the Reverse Supplemental Code Channel assignment (in 80 ms superframes) by setting USE_REV_DURATION to '1' and indicating the desired duration in the REV_DURATION field. If USE_REV_DURATION is set to '0', a duration of infinity is indicated, and the base station shall set the REV_DURATION to '00000000'. If NUM_REV_CODES is '000', then the base station shall set USE_REV_DURATION to '0' and REV_DURATION shall be set to '00000000'.
- The base station may set USE_REV_DURATION to '1' and REV_DURATION to the time interval after the action time of the message, in units of 80 ms, during which the mobile station may transmit on the assigned Reverse Supplemental Code Channels. The base station may set USE_REV_DURATION to '0' to indicate an infinite duration for the allocation of Forward Supplemental Code Channels.
- The base station may specify a closed loop power control step size by setting USE_PWR_CNTL_STEP to '1' and indicating the desired power control step size in the PWR_CNTL_STEP field (see 6.1.2.3.2). Otherwise, the base station shall set USE_PWR_CNTL_STEP to '0'. The base station shall not specify a power control step size not supported by the mobile station.

#### 7.6.6.2.3 Active Set Maintenance

The base station shall maintain an Active Set for each mobile station under its control as follows:

- When the base station sends the *Channel Assignment Message*, it shall initialize the Active Set to contain only the pilot associated with the assigned Forward Traffic Channel.
- When the base station sends the *Extended Channel Assignment Message*, it shall initialize the Active Set to contain all pilots included in the message.
- When the base station sends an *Extended Handoff Direction Message* or *General Handoff Direction Message*, it shall add to the Active Set, before the action time of the message, all pilots included in the message, if they are not already in the Active Set.
- The base station shall delete the pilots that were not included in the most recent *Extended Handoff Direction Message* or *General Handoff Direction Message* from the Active Set upon receipt of the *Handoff Completion Message*.

#### 7.6.6.2.4 Soft Handoff

The base station should use soft handoff when directing a mobile station from one Forward Traffic Channel to another Forward Traffic Channel having the same frequency assignment.

##### 7.6.6.2.4.1 Receiving During Soft Handoff

Each base station in the Active Set shall demodulate the Reverse Traffic Channel. The base station should provide diversity combining of the demodulated signals obtained by each base station in the Active Set.

7.6.6.2.4.2 Transmitting During Soft Handoff

The base station shall begin transmitting identical modulation symbols on all Forward Traffic Channels specified in an *Extended Handoff Direction Message* or *General Handoff Direction Message* (with the possible exception of the power control subchannel) by the action time of the message.

The base station shall transmit identical power control bits on all identical power control subchannels that were identified as such in the last *Extended Handoff Direction Message* or *General Handoff Direction Message.*

The base station shall use the same long code mask on all Forward Traffic Channels whose associated pilots are in the Active Set.

7.6.6.2.5 CDMA-to-Analog Hard Handoff

The base station may direct the mobile station to perform a handoff from the CDMA system to an analog system in a band class that the mobile station supports by sending an *Analog Handoff Direction Message.*

## 7.7 Signaling Formats

The following sections specify the requirements on the signaling message formats transmitted on the Sync Channel, the Paging Channel, and the Forward Traffic Channel.

In any multi-bit field in the following messages, the most significant bit (MSB) shall be transmitted first.

### 7.7.1 Sync Channel

The Sync Channel is used to provide time and frame synchronization to the mobile station. Only one message, the *Sync Channel Message*, is sent on the Sync Channel.

#### 7.7.1.1 Sync Channel Structure

The Sync Channel is divided into 80 ms superframes (see 7.1.3.3.2). Each superframe is divided into three 26.666... ms frames. The first bit of each frame is a SOM Bit, and the remaining bits in the frame comprise the Sync Channel frame body.

A Sync Channel message capsule is composed of a Sync Channel message and padding. A Sync Channel message consists of a length field, a message body, and a CRC field. Padding consists of zero or more bits.

Sync Channel message capsules shall begin with the first bit of the first Sync Channel frame body of a Sync Channel superframe. The base station shall set the SOM Bit immediately preceding the beginning of a Sync Channel message capsule to '1', and shall set all other SOM Bits to '0'. The base station shall transmit the Sync Channel message in consecutive Sync Channel frame bodies. The base station shall include sufficient padding bits in each Sync Channel message capsule to extend it through the bit preceding the SOM Bit at the beginning of the next Sync Channel superframe. The base station shall begin a new Sync Channel message capsule in the first Sync Channel frame of that superframe.

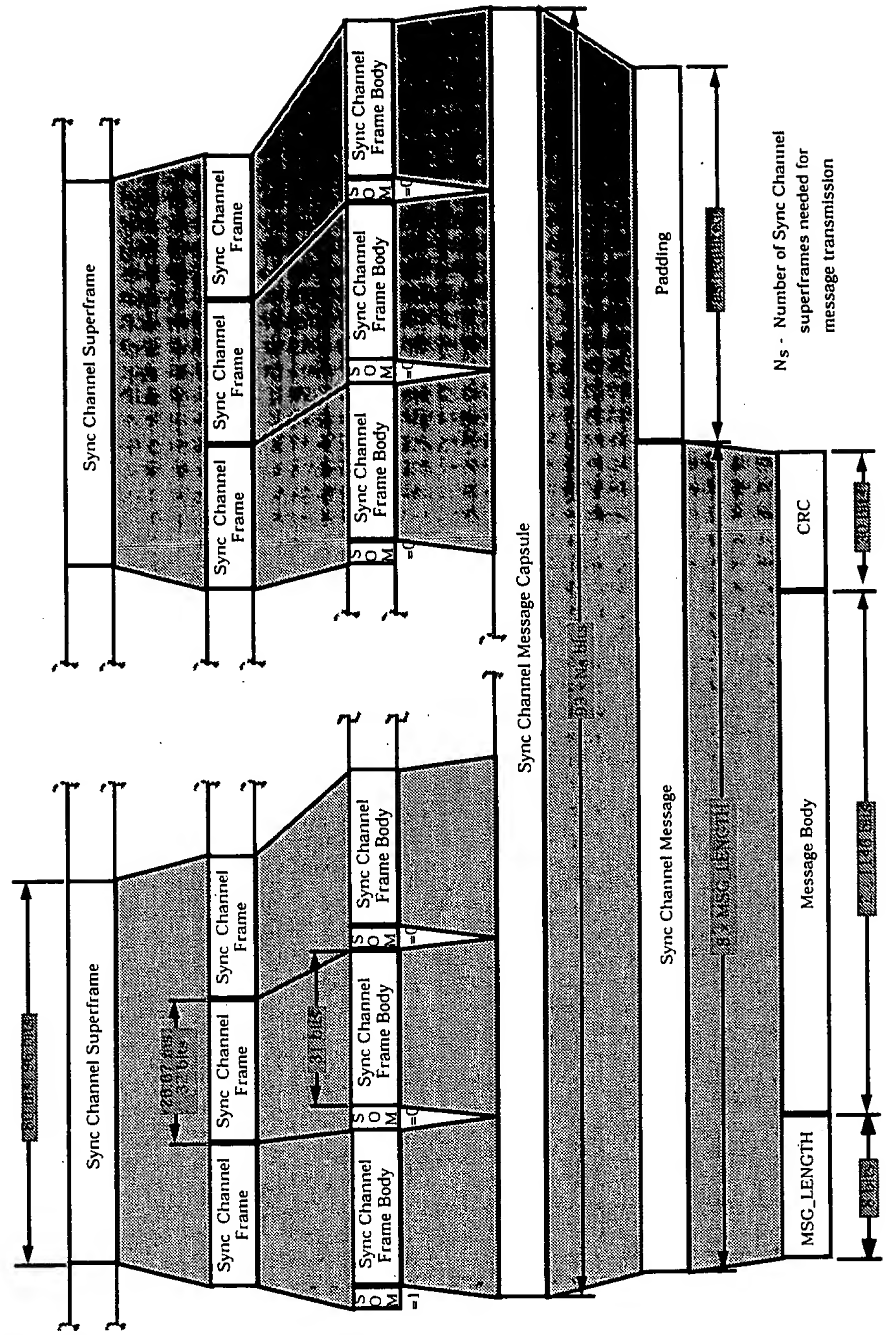


**Figure 7.7.1.1-1. Sync Channel Structure (1200 bps) Example**

### 7.7.1.2 Sync Channel Message Structure

The *Sync Channel Message* shall consist of an 8-bit MSG_LENGTH field, a *Sync Channel Message* body field, and a CRC field. Padding bits shall be appended to the end of the *Sync Channel Message* so that the total of the *Sync Channel Message* length added to the length of the padding bits shall be equal to an integer multiple of 93 bits. Padding bits shall be set to '0'.

#### 7.7.1.2.1 Sync Channel MSG_LENGTH Field

The base station shall set the MSG_LENGTH field of the *Sync Channel Message* to the length of the *Sync Channel Message* in octets, including the MSG_LENGTH field, the *Sync Channel Message* body, and the CRC. The MSG_LENGTH field shall be 8 bits in length. The base station shall limit the maximum *Sync Channel Message* length to 148 octets, or 1184 bits; that is, the value of the MSG_LENGTH field shall not exceed 148.

#### 7.7.1.2.2 Sync Channel Signaling Message CRC

A 30-bit CRC shall be computed for each *Sync Channel Message*. The CRC includes the MSG_LENGTH field and the message body field. The generator polynomial for the CRC shall be as follows:

$$g(x) = x^{30} + x^{29} + x^{21} + x^{20} + x^{15} + x^{13} + x^{12} + x^{11} + x^{8} + x^{7} + x^{6} + x^{2} + x + 1.$$

The following procedure and the logic shown in Figure 7.7.1.2.2-1 (or equivalent) shall be used to compute the CRC:

- All shift register elements shall be initialized to logical one.[12]
- The switches shall be set in the up position.
- The information bit count k shall be defined as 8 + message body length in bits.
- The register shall be clocked k times, with the length and message body fields of the message as the k input bits.
- The switches shall be set in the down position so that the output is a modulo-2 addition with a '1' and the successive shift register inputs are '0'.
- The register shall be clocked an additional 30 times.
- The 30 additional output bits shall be the CRC field.
- The bits shall be transmitted in the order in which they appear at the output of the CRC encoder.

[12] Initialization of the register to ones causes the CRC for all-zero data to be non-zero.

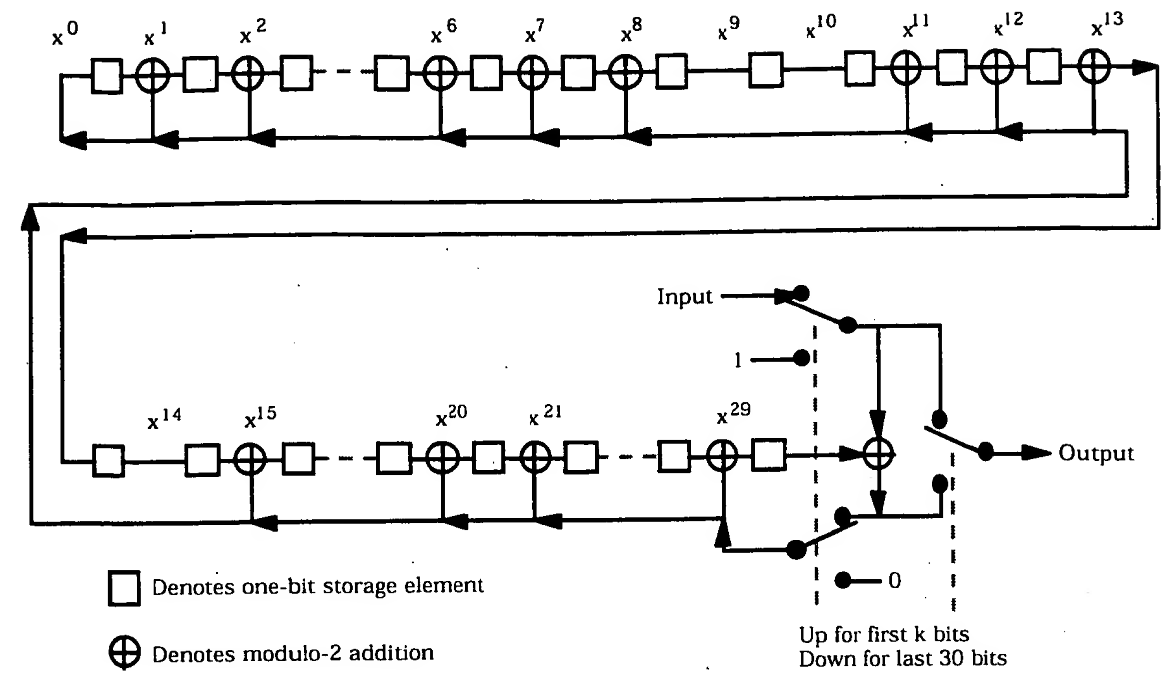


**Figure 7.7.1.2.2-1. Sync Channel CRC Calculation**

7.7.1.3 Sync Channel Message Body Format

When the base station sends a *Sync Channel Message*, it shall use the following fixed-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00000001') | 8 |
| P_REV | 8 |
| MIN_P_REV | 8 |
| SID | 15 |
| NID | 16 |
| PILOT_PN | 9 |
| LC_STATE | 42 |
| SYS_TIME | 36 |
| LP_SEC | 8 |
| LTM_OFF | 6 |
| DAYLT | 1 |
| PRAT | 2 |
| CDMA_FREQ | 11 |

MSG_TYPE - Message type.

The base station shall set this field to '00000001'.

P_REV - Protocol revision level.

The base station shall set this field to '00000101'.

MIN_P_REV - Minimum protocol revision level.

The base station sets this field to prevent mobile stations which cannot be supported by the base station from accessing the system.

The base station shall set this field to the minimum protocol revision level that it supports. For Band Class 0 operation, the base station should set this field to a value of '00000010' or greater. For Band Class 1 operation, the base station should set this field to a value of '00000001' or greater.

SID - System identification.

The base station shall set this field to the system identification number for this system (see 6.6.5.2).

NID - Network identification.

This field serves as a sub-identifier of a system as defined by the owner of the SID.

The base station shall set this field to the network identification number for this network (see 6.6.5.2).

PILOT_PN - Pilot PN sequence offset index.

The base station shall set this field to the pilot PN sequence offset for this base station, in units of 64 PN chips.

LC_STATE - Long code state.

The base station shall set this field to the long code state at the time given by the SYS_TIME field of this message.

SYS_TIME - System time.

The base station shall set this field to the System Time as of four Sync Channel superframes (320 ms) after the end of the last superframe containing any part of this *Sync Channel Message*, minus the pilot PN sequence offset, in units of 80 ms (see 1.2).

LP_SEC - The number of leap seconds that have occurred since the start of System Time.

The base station shall set this field to the number of leap seconds that have occurred since the start of System Time, as of the time given by the SYS_TIME field of this message.

LTM_OFF - Offset of local time from System Time.

The base station shall set this field to the two's complement offset of local time from System Time, in units of 30 minutes.

The local time of day, in units of 80 ms, as of four Sync Channel superframes (320 ms) after the end of the last superframe containing any part of this *Sync Channel Message*, minus the pilot PN sequence offset, is equal to SYS_TIME - (LP_SEC × 12.5) + (LTM_OFF × 22500).

DAYLT - Daylight savings time indicator.

If daylight savings time is in effect, the base station shall set this field to '1'; otherwise, the base station shall set this field to '0'.

PRAT - Paging Channel data rate.

The base station shall set this field to the PRAT field value shown in Table 7.7.1.3-1 corresponding to the data rate used by the Paging Channels in the system.

**Table 7.7.1.3-1. Paging Channel Data Rate**

| PRAT Field (binary) | Paging Channel data rate |
|---|---|
| 00 | 9600 bps |
| 01 | 4800 bps |
| 10 | Reserved |
| 11 | Reserved |

CDMA_FREQ - Frequency assignment.

The base station shall set this field to the CDMA Channel number corresponding to the CDMA frequency assignment for the CDMA Channel containing a Primary Paging Channel. [13]

[13] If compatibility with IS-95-B mobile stations is desired in a Band Class 0 system, the CDMA_FREQ field is set to the CDMA frequency assignment containing this Sync Channel.

### 7.7.2 Paging Channel

The Paging Channel is used to send control information to mobile stations that have not been assigned to a Traffic Channel.

#### 7.7.2.1 Paging Channel Structure

##### 7.7.2.1.1 Paging Channel Slot Structure

The Paging Channel is divided into 80 ms slots. The slots are grouped into cycles of 2048 slots (163.84 seconds) referred to as maximum slot cycles. Each maximum slot cycle begins at the start of the frame when System Time, in units of 80 ms, modulo 2048 is zero. The slots of each maximum slot cycle are numbered from 0 to 2047, as shown in Figure 7.7.2.1.1-1. A mobile station operating in the slotted mode monitors the Paging Channel using a slot cycle with a length that is a submultiple of the maximum slot cycle length (see 6.6.2.1.1.3).

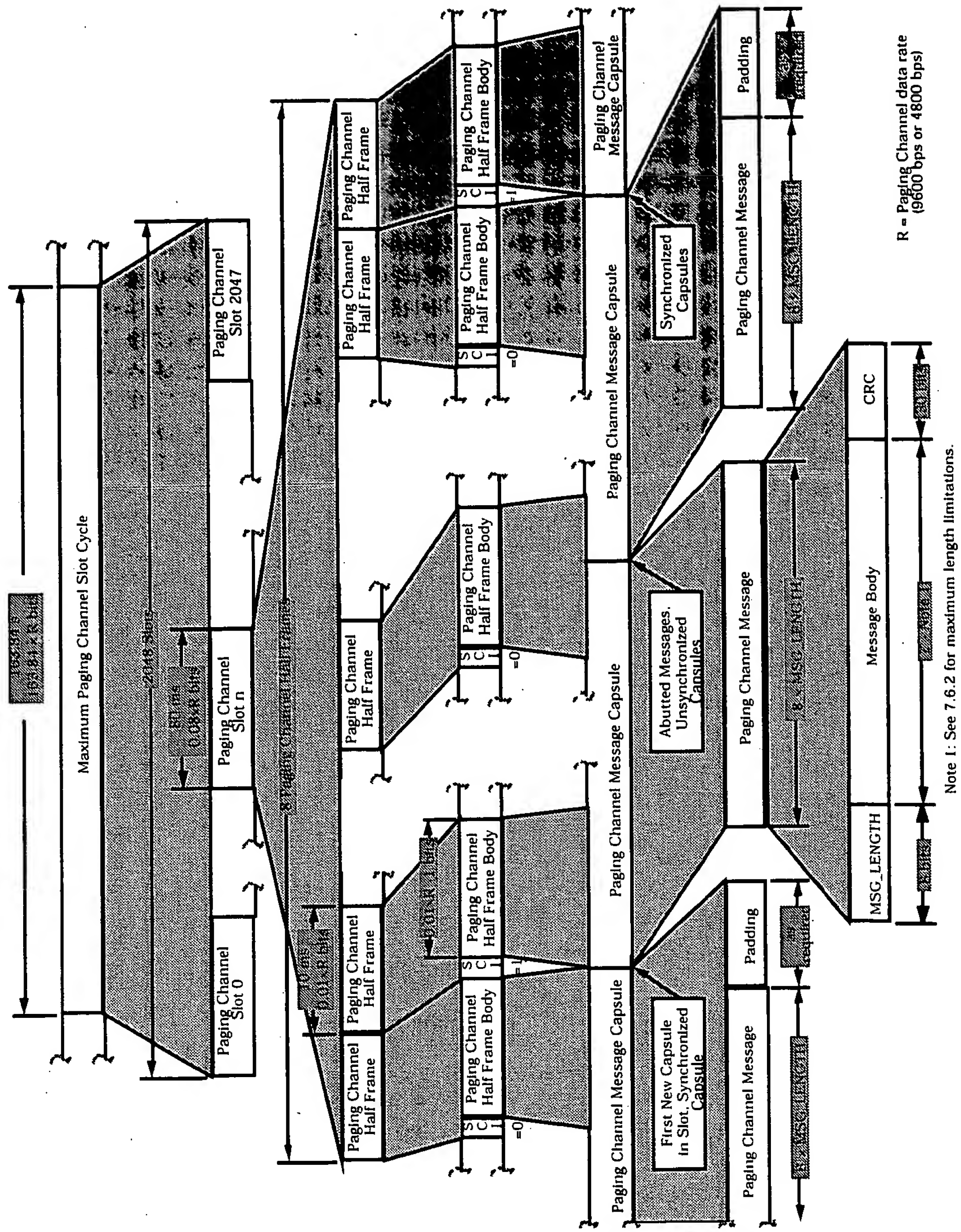


**Figure 7.7.2.1.1-1. Paging Channel Structure Example**

7.7.2.1.2 Paging Channel Message Capsule Structure

Each 80 ms slot is composed of four Paging Channel frames, each 20 ms in length. As shown in Figure 7.7.2.1.1-1, a 20 ms long Paging Channel frame is divided into 10 ms long Paging Channel half frames. The first bit in any Paging Channel half frame is an SCI (Synchronized Capsule Indicator) bit.

A Paging Channel message capsule is composed of a Paging Channel message and padding. A Paging Channel message consists of a length field, a message body, and a CRC field. Padding consists of zero or more bits.

The base station may transmit synchronized or unsynchronized Paging Channel message capsules. A synchronized message capsule starts on the second bit of a Paging Channel half frame. An unsynchronized message capsule begins immediately after the previous message capsule.

If after the end of a Paging Channel message there remain 8 bits or more[14] before the next SCI bit, the base station may transmit an unsynchronized message capsule immediately following that message. The base station shall not include any padding bits in a Paging Channel message capsule that is followed by an unsynchronized Paging Channel message capsule.

If after the end of a Paging Channel message there remain fewer than 8 bits before the next SCI bit, or if no unsynchronized message capsule is transmitted following a Paging Channel message capsule, the base station shall include sufficient padding bits in that message capsule to extend it through the bit preceding the next SCI bit, and the base station shall transmit a synchronized message capsule immediately following that SCI bit.[15] The base station shall set all padding bits to '0'.

When a message capsule immediately follows an SCI bit, the base station shall set that SCI bit to '1'. The base station shall set all other SCI bits to '0'.

The base station shall begin a synchronized message capsule in the first half frame of a Paging Channel slot only if the four bits immediately preceding the SCI bit are padding bits.

The base station shall transmit the first message that begins in each Paging Channel slot in a synchronized message capsule.[16]

[14] This restriction permits the mobile station to determine whether an unsynchronized message is being transmitted by checking the first 8 bits after the end of the message for a non-zero MSG_LENGTH value.

[15] This implies that all bits transmitted on the Paging Channel are either SCI bits or are part of a message capsule.

[16] This permits mobile stations operating in the slotted mode to obtain synchronization immediately after becoming active.

### 7.7.2.2 Paging Channel Message Structure

#### 7.7.2.2.1 Paging Channel MSG_LENGTH Field

The base station shall set the MSG_LENGTH field of each Paging Channel message to the length of the message in octets, including the MSG_LENGTH field, the message body, and the CRC. The MSG_LENGTH field shall be 8 bits in length. Base stations may send Paging Channel Messages of maximum length not to exceed the requirements in 7.6.2.

#### 7.7.2.2.2 Paging Channel Message CRC

A 30-bit CRC shall be computed for each Paging Channel signaling message. The CRC shall include the MSG_LENGTH field and the message body field. The generator polynomial for the CRC shall be as follows:

$$g(x) = x^{30} + x^{29} + x^{21} + x^{20} + x^{15} + x^{13} + x^{12} + x^{11} + x^{8} + x^{7} + x^{6} + x^{2} + x + 1.$$

The CRC shall be the value computed by the following procedure and the logic shown in Figure 7.7.2.2.2-1:

- All shift register elements shall be initialized to logical one.[17]
- The switches shall be set in the up position.
- The information bit count k shall be defined as 8 + message body length in bits.
- The register shall be clocked k times, with the length and message body fields of the message as the k input bits.
- The switches shall be set in the down position so that the output is a modulo-2 addition with a '1' and the successive shift register inputs are '0'.
- The register shall be clocked an additional 30 times.
- The 30 additional output bits shall be the CRC field.
- The bits shall be transmitted in the order in which they appear at the output of the CRC encoder.

[17] Initialization of the register to ones causes the CRC for all-zero data to be non-zero.

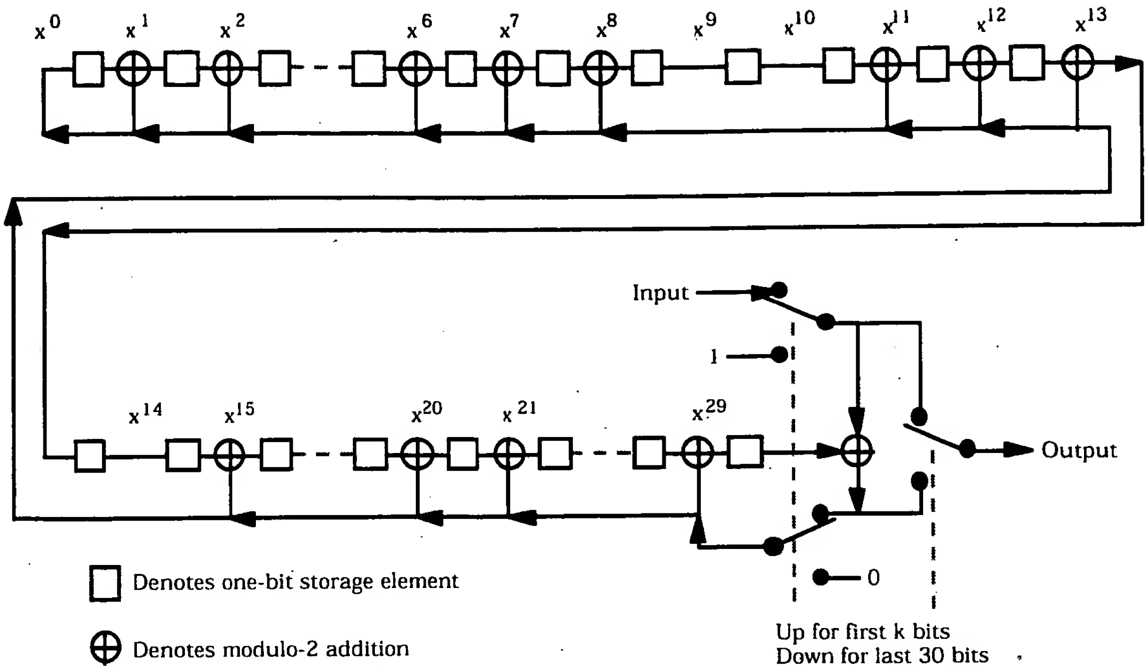


**Figure 7.7.2.2.2-1. Paging Channel CRC Calculation**

### 7.7.2.3 Paging Channel Message Body Format

The Paging Channel messages are summarized in Table 7.7.2.3-1. Paging Channel messages are grouped into the message groups shown in the table. Messages of each group are sent either periodically or on an as-needed basis.

**Table 7.7.2.3-1. Paging Channel Messages**

| Message Name | MSG_TYPE (binary) | Section Number |
|---|---|---|
| *System Parameters Message* | 00000001 | 7.7.2.3.2.1 |
| *Access Parameters Message* | 00000010 | 7.7.2.3.2.2 |
| *Neighbor List Message* (Band Class 0 only) | 00000011 | 7.7.2.3.2.3 |
| *CDMA Channel List Message* | 00000100 | 7.7.2.3.2.4 |
| Reserved for obsolete *Slotted Page Message* | 00000101 | 7.7.2.3.2.5 |
| Reserved for obsolete *Page Message* | 00000110 | 7.7.2.3.2.6 |
| *Order Message* | 00000111 | 7.7.2.3.2.7 |
| *Channel Assignment Message* | 00001000 | 7.7.2.3.2.8 |
| *Data Burst Message* | 00001001 | 7.7.2.3.2.9 |
| *Authentication Challenge Message* | 00001010 | 7.7.2.3.2.10 |
| *SSD Update Message* | 00001011 | 7.7.2.3.2.11 |
| *Feature Notification Message* | 00001100 | 7.7.2.3.2.12 |
| *Extended System Parameters Message* | 00001101 | 7.7.2.3.2.13 |
| *Extended Neighbor List Message* (Band Class 1 only) | 00001110 | 7.7.2.3.2.14 |
| *Status Request Message* | 00001111 | 7.7.2.3.2.15 |
| *Service Redirection Message* | 00010000 | 7.7.2.3.2.16 |
| *General Page Message* | 00010001 | 7.7.2.3.2.17 |
| *Global Service Redirection Message* | 00010010 | 7.7.2.3.2.18 |
| *TMSI Assignment Message* | 00010011 | 7.7.2.3.2.19 |
| *PACA Message* | 00010100 | 7.7.2.3.2.20 |
| *Extended Channel Assignment Message* | 00010101 | 7.7.2.3.2.21 |
| *General Neighbor List Message* | 00010110 | 7.7.2.3.2.22 |
| *Null Message* | — | 7.7.2.3.2.23 |

7.7.2.3.1 Common Fields

Many Paging Channel messages include the following common fields defining the mobile station to which the message is addressed.

ADDR_TYPE - Address field type.

The base station shall set this field to the value shown in Table 7.7.2.3.1-1 corresponding to the address type contained in the ADDRESS field.

**Table 7.7.2.3.1-1. Address Types**

| Description | ADDR_TYPE (binary) | ADDR_LEN (octets) |
|---|---|---|
| IMSI_S | 000 | 5 |
| ESN | 001 | 4 |
| IMSI | 010 | 5 to 7 |
| TMSI | 011 | 2 to 12 |
| Reserved | 100 | - |
| BROADCAST | 101 | Variable |
| Reserved | 110 | - |
| Reserved | 111 | - |

ADDR_LEN - Address field length.

The base station shall set this field to the number of octets in the ADDRESS field.

ADDRESS - Mobile station or broadcast address.

The base station shall set this field to the mobile station or broadcast address, using the address type specified in the ADDR_TYPE field.

If ADDR_TYPE is equal to '000', the ADDRESS field shall consist of the following subfields:

| Subfield | Length (bits) |
|---|---|
| IMSI_S | 34 |
| RESERVED | 6 |

If ADDR_TYPE is equal to '001', the ADDRESS field shall consist of the following subfields:

| Subfield | Length (bits) |
|---|---|
| ESN | 8 × ADDR_LEN |

If ADDR_TYPE is equal to '010', the ADDRESS field shall consist of the following subfields:

| Subfield | Length (bits) |
|---|---|
| IMSI_CLASS | 1 |
| IMSI class specific subfields | 7 + 8 × (ADDR_LEN - 1) |

If ADDR_TYPE is equal to '011', the ADDRESS field shall consist of the following subfields:

| Subfield | Length (bits) |
|---|---|
| TMSI_ZONE | If ADDR_LEN is greater than four, 8 × (ADDR_LEN - 4); otherwise, 0. |
| TMSI_CODE_ADDR | If ADDR_LEN is greater than four, 32; otherwise, 8 × ADDR_LEN. |

If ADDR_TYPE is equal to '101', the ADDRESS field shall consist of the following subfields:

| Subfield | Length (bits) |
|---|---|
| BC_ADDR | 8 × ADDR_LEN |

BC_ADDR - Broadcast address.

The base station shall set this field according to the requirements applicable to the burst type of the *Data Burst Message* containing this address.

If the ADDR_TYPE is equal to '001', the base station shall include the following field in the ADDRESS field:

ESN - Mobile station's electronic serial number.

The base station shall set this field to the electronic serial number of the mobile station to which this message is addressed.

If the ADDR_TYPE is equal to '010', the base station shall include the following fields in the ADDRESS field:

IMSI_CLASS - The base station shall set this field as described in 7.6.2.1.5.1.

IMSI class specific subfields - IMSI class specific subfields.

The base station shall set this field to the appropriate class specific subfields as described below.

If IMSI_CLASS is equal to '0', the following IMSI class specific subfields shall be used:

| IMSI Class Specific Subfield | Length (bits) |
|---|---|
| IMSI_CLASS_0_TYPE | 2 |
| IMSI class 0 type-specific subfields | see Table 7.7.2.3.1-2 |

If IMSI_CLASS is equal to '1', the following IMSI class specific subfields shall be used:

| IMSI Class Specific Subfield | Length (bits) |
|---|---|
| IMSI_CLASS_1_TYPE | 1 |
| IMSI class 0 type-specific subfields | see Table 7.7.2.3.1-3 |

If ADDR_TYPE is equal to '011', the base station shall include the following fields in the ADDRESS field:

TMSI_ZONE - TMSI zone.

The base station shall set this field to the TMSI zone number associated with the assigned TMSI, as specified in TIA/EIA/IS-735. If ADDR_LEN is less or equal to four, the base station shall omit this field.

TMSI_CODE_ADDR - Temporary mobile station identity code address.

If the TMSI_ZONE is included in the address, the base station shall set this field to the 32-bit TMSI code assigned to the mobile station.

Otherwise, the base station shall set this field as follows: If the most significant octet of the TMSI_CODE assigned to the mobile station is equal to '00000000', the base station may set TMSI_CODE_ADDR to the 24 least significant bits of the TMSI_CODE assigned to the mobile station. If the two most significant octets of the TMSI_CODE assigned to the mobile station are both equal to '00000000', the base station may set TMSI_CODE_ADDR to the 16 least significant bits of the TMSI_CODE assigned to the mobile station. Otherwise, the base station shall set TMSI_CODE_ADDR to the TMSI_CODE assigned to the mobile station.

If the IMSI_CLASS is equal to '0', the base station shall include the following fields in the IMSI class specific subfields:

IMSI_CLASS_0_TYPE - The base station shall set this field as described in 7.6.2.1.5.1 (see Table 7.7.2.3.1-2).

**Table 7.7.2.3.1-2. IMSI Class 0 Types**

| Description | IMSI_CLASS_0_TYPE (binary) | Length of IMSI Class 0 Type-Specific Subfields (bits) |
|---|---|---|
| IMSI_S included | 00 | 37 |
| IMSI_S and IMSI_11_12 included | 01 | 45 |
| IMSI_S and MCC included | 10 | 45 |
| IMSI_S, IMSI_11_12, and MCC included | 11 | 53 |

IMSI class 0 type specific subfields - IMSI class 0 type-specific subfields.

The base station shall set this field to the IMSI class 0 type-specific fields as described below.

If the IMSI_CLASS is equal to '1', the base station shall include the following fields in the IMSI class specific subfields:

IMSI_CLASS_1_TYPE - The base station shall set this field as described in 7.6.2.1.5.1 (see Table 7.7.2.3.1-3).

**Table 7.7.2.3.1-3. IMSI Class 1 Types**

| Description | IMSI_CLASS_1_TYPE (binary) | Length of IMSI Class 1 Type Specific Subfields (bits) |
|---|---|---|
| IMSI_S and IMSI_11_12 included | 0 | 46 |
| IMSI_S, IMSI_11_12, and MCC included | 1 | 54 |

IMSI class 1 type specific subfields - IMSI class 1 type-specific subfields.

The base station shall set this field to the IMSI class 1 type-specific fields as described below.

If the IMSI_CLASS is equal to '0' and IMSI_CLASS_0_TYPE is equal to '00', then the IMSI class 0 type-specific subfields shall consist of:

| IMSI Class 0 Type-Specific Subfield | Length (bits) |
|---|---|
| RESERVED | 3 |
| IMSI_S | 34 |

If the IMSI_CLASS is equal to '0' and IMSI_CLASS_0_TYPE is equal to '01', then the IMSI class 0 type-specific subfields shall consist of:

| IMSI Class 0 Type-Specific Subfield | Length (bits) |
|---|---|
| RESERVED | 4 |
| IMSI_11_12 | 7 |
| IMSI_S | 34 |

If the IMSI_CLASS is equal to '0' and IMSI_CLASS_0_TYPE is equal to '10', then the IMSI class 0 type-specific subfields shall consist of:

| IMSI Class 0 Type-Specific Subfield | Length (bits) |
|---|---|
| RESERVED | 1 |
| MCC | 10 |
| IMSI_S | 34 |

If the IMSI_CLASS is equal to '0' and IMSI_CLASS_0_TYPE is equal to '11', then the IMSI class 0 type-specific subfields shall consist of:

| IMSI Class 0 Type-Specific Subfield | Length (bits) |
|---|---|
| RESERVED | 2 |
| MCC | 10 |
| IMSI_11_12 | 7 |
| IMSI_S | 34 |

If IMSI_CLASS is equal to '1' and IMSI_CLASS_1_TYPE is equal to '0', then the IMSI class 1 type-specific subfields shall consist of:

| IMSI Class 1 Type-Specific Subfield | Length (bits) |
|---|---|
| RESERVED | 2 |
| IMSI_ADDR_NUM | 3 |
| IMSI_11_12 | 7 |
| IMSI_S | 34 |

If IMSI_CLASS is equal to '1' and IMSI_CLASS_1_TYPE is equal to '1', then the IMSI class 1 type-specific subfields shall consist of:

| IMSI Class 1 Type-Specific Subfield | Length (bits) |
|---|---|
| IMSI_ADDR_NUM | 3 |
| MCC | 10 |
| IMSI_11_12 | 7 |
| IMSI_S | 34 |

If the IMSI_CLASS is equal to '0' and the IMSI_CLASS_0_TYPE is equal to '00', the base station shall include the following fields in the IMSI class 0 type-specific subfields:

RESERVED - Reserved bits.

The base station shall set these bits to '000'.

IMSI_S - Last ten digits of the IMSI.

The base station shall set this field to IMSI_S. See 6.3.1.

If the IMSI_CLASS is equal to '0' and the IMSI_CLASS_0_TYPE is equal to '01', the base station shall include the following fields in the IMSI class 0 type-specific subfields:

RESERVED - Reserved bits.

The base station shall set these bits to '0000'.

IMSI_11_12 - The 11th and 12th digits of IMSI.

The base station shall set this field to IMSI_11_12. See 6.3.1.

IMSI_S - Last ten digits of the IMSI.

The base station shall set this field to IMSI_S. See 6.3.1.

If the IMSI_CLASS is equal to '0' and the IMSI_CLASS_0_TYPE is equal to '10', the base station shall include the following fields in the IMSI class 0 type-specific subfields:

RESERVED - Reserved bit.

The base station shall set this bit to '0'.

MCC - Mobile Country Code.

The base station shall set this field to the MCC. See 6.3.1.

IMSI_S - Last ten digits of the IMSI.

The base station shall set this field to IMSI_S. See 6.3.1.

If the IMSI_CLASS is equal to '0' and the IMSI_CLASS_0_TYPE is equal to '11', the base station shall include the following fields in the IMSI class 0 type-specific subfields:

RESERVED - Reserved bits.

The base station shall set these bits to '00'.

MCC - Mobile Country Code.

The base station shall set this field to the MCC. See 6.3.1.

IMSI_11_12 - The 11th and 12th digits of IMSI.

The base station shall set this field to IMSI_11_12. See 6.3.1.

IMSI_S - Last ten digits of the IMSI.

The base station shall set this field to IMSI_S. See 6.3.1.

If the IMSI_CLASS is equal to '1' and the IMSI_CLASS_1_TYPE is equal to '0', the base station shall include the following fields in the IMSI class 1 type-specific subfields:

RESERVED - Reserved bits.

The base station shall set these bits to '00'.

IMSI_ADDR_NUM - Number of IMSI address digits.

The base station shall set this field to four less than the number of digits in the NMSI.

IMSI_11_12 - The 11th and 12th digits of IMSI.

The base station shall set this field to IMSI_11_12. See 6.3.1.

IMSI_S - Last ten digits of the IMSI.

The base station shall set this field to IMSI_S. See 6.3.1.

If the IMSI_CLASS is equal to '1' and the IMSI_CLASS_1_TYPE is equal to '1', the base station shall include the following fields in the IMSI class 1 type-specific subfields:

IMSI_ADDR_NUM - Number of IMSI address digits.

The base station shall set this field to four less than the number of digits in the NMSI.

MCC - Mobile Country Code.

The base station shall set this field to the MCC. See 6.3.1.

IMSI_11_12 - The 11th and 12th digits of IMSI.

The base station shall set this field to IMSI_11_12. See 6.3.1.

IMSI_S - Last ten digits of the IMSI.

The base station shall set this field to IMSI_S. See 6.3.1.

#### 7.7.2.3.2 Message Body Contents

The following sections specify the contents of the message body for each message that may be sent on the Paging Channel.

7.7.2.3.2.1 System Parameters Message

When the base station sends a *System Parameters Message*, it shall use the following fixed-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00000001') | 8 |
| PILOT_PN | 9 |
| CONFIG_MSG_SEQ | 6 |
| SID | 15 |
| NID | 16 |
| REG_ZONE | 12 |
| TOTAL_ZONES | 3 |
| ZONE_TIMER | 3 |
| MULT_SIDS | 1 |
| MULT_NIDS | 1 |
| BASE_ID | 16 |
| BASE_CLASS | 4 |
| PAGE_CHAN | 3 |
| MAX_SLOT_CYCLE_INDEX | 3 |
| HOME_REG | 1 |
| FOR_SID_REG | 1 |
| FOR_NID_REG | 1 |
| POWER_UP_REG | 1 |
| POWER_DOWN_REG | 1 |
| PARAMETER_REG | 1 |
| REG_PRD | 7 |
| BASE_LAT | 22 |
| BASE_LONG | 23 |
| REG_DIST | 11 |
| SRCH_WIN_A | 4 |

(continues on next page)

| Field | Length (bits) |
|---|---|
| SRCH_WIN_N | 4 |
| SRCH_WIN_R | 4 |
| NGHBR_MAX_AGE | 4 |
| PWR_REP_THRESH | 5 |
| PWR_REP_FRAMES | 4 |
| PWR_THRESH_ENABLE | 1 |
| PWR_PERIOD_ENABLE | 1 |
| PWR_REP_DELAY | 5 |
| RESCAN | 1 |
| T_ADD | 6 |
| T_DROP | 6 |
| T_COMP | 4 |
| T_TDROP | 4 |
| EXT_SYS_PARAMETER | 1 |
| EXT_NGHBR_LIST | 1 |
| GEN_NGHBR_LIST | 1 |
| GLOBAL_REDIRECT | 1 |

MSG_TYPE - Message type.

The base station shall set this field to '00000001'.

PILOT_PN - Pilot PN sequence offset index.

The base station shall set this field to the pilot PN sequence offset for this base station, in units of 64 PN chips.

CONFIG_MSG_SEQ - Configuration message sequence number.

The base station shall set this field to CONFIG_SEQ (see 7.6.2.2).

SID - System identification.

The base station shall set this field to the system identification number for this system (see 6.6.5.2).

NID - Network identification.

This field serves as a sub-identifier of a system as defined by the owner of the SID.

The base station shall set this field to the network identification number for this network (see 6.6.5.2).

REG_ZONE - Registration zone.

The base station shall set this field to its registration zone number (see 6.6.5.1.5).

TOTAL_ZONES - Number of registration zones to be retained.

The base station shall set this field to the number of registration zones the mobile station is to retain for purposes of zone-based registration (see 6.6.5.1.5).

If zone-based registration is to be disabled, the base station shall set this field to '000'.

ZONE_TIMER - Zone timer length.

The base station shall set this field to the ZONE_TIMER value shown in Table 7.7.2.3.2.1-1 corresponding to the length of the zone registration timer to be used by mobile stations.

**Table 7.7.2.3.2.1-1. Value of Zone Timer**

| ZONE_TIMER Value (binary) | Timer Length (Minutes) |
|---|---|
| 000 | 1 |
| 001 | 2 |
| 010 | 5 |
| 011 | 10 |
| 100 | 20 |
| 101 | 30 |
| 110 | 45 |
| 111 | 60 |

MULT_SIDS - Multiple SID storage indicator.

If mobile stations may store entries of SID_NID_LIST containing different SIDs, the base station shall set this field to '1'; otherwise the base station shall set this field to '0'.

MULT_NIDS - Multiple NID storage indicator.

If mobile stations may store multiple entries of SID_NID_LIST having the same SID (with different NIDs), the base station shall set this field to '1'; otherwise the base station shall set this field to '0'.

BASE_ID - Base station identification.

The base station shall set this field to its identification number.

BASE_CLASS - Base station class.

The base station shall set this field to the value shown in Table 7.7.2.3.2.1-2 corresponding to the class of service provided by this base station.

**Table 7.7.2.3.2.1-2. Base Station Classes**

| Value (binary) | Class of Service Provided |
|---|---|
| 0000 | Public Macrocellular System |
| 0001 | Public PCS System |
| All other values are reserved. | |

PAGE_CHAN - Number of Paging Channels.

The base station shall set this field to the number of Paging Channels on this CDMA Channel. The base station shall not set this field to '000'.

MAX_SLOT_CYCLE_INDEX - Maximum slot cycle index.

The base station shall set this field to the SLOT_CYCLE_INDEX value corresponding to the maximum slot cycle length permitted (see 6.6.2.1.1).

HOME_REG - Home registration indicator.

If mobile stations that are not roaming (see 6.6.5.3) and have MOB_TERM_HOME equal to '1' are to be enabled for autonomous registrations, the base station shall set this field to '1'. If such mobile stations are not to be enabled for autonomous registration, the base station shall set this field to '0'.

FOR_SID_REG - SID roamer registration indicator.

If mobile stations that are foreign SID roamers (see 6.6.5.3) and have MOB_TERM_FOR_SID equal to '1' are to be enabled for autonomous registration, the base station shall set this field to '1'.. If such mobile stations are not to be enabled for autonomous registration, the base station shall set this field to '0'.

FOR_NID_REG - NID roamer registration indicator.

If mobile stations that are foreign NID roamers (see 6.6.5.3) and have MOB_TERM_FOR_NID equal to '1' are to be enabled for autonomous registration, the base station shall set this field to '1'. If such mobile stations are not to be enabled for autonomous registration, the base station shall set this field to '0'.

POWER_UP_REG - Power-up registration indicator.

If mobile stations enabled for autonomous registration are to register immediately after powering on and receiving the system overhead messages, the base station shall set this field to '1'; otherwise, the base station shall set this field to '0'.

POWER_DOWN_REG - Power-down registration indicator.

If mobile stations enabled for autonomous registration are to register immediately before powering down, the base station shall set this field to '1'; otherwise, the base station shall set this field to '0'.

PARAMETER_REG - Parameter-change registration indicator.

If mobile stations are to register on parameter change events as specified in 6.6.5.1.6, the base station shall set this field to '1'. If not, the base station shall set this field to '0'.

REG_PRD - Registration period.

If mobile stations are not to perform timer-based registration, the base station shall set this field to '0000000'. If mobile stations are to perform timer-based registration, the base station shall set this field to the value in the range 29 to 85 inclusive, such that the desired timer value is

$$\lfloor 2^{REG\_PRD/4} \rfloor \times 0.08 \text{ seconds.}$$

BASE_LAT - Base station latitude.

The base station shall set this field to its latitude in units of 0.25 second, expressed as a two's complement signed number with positive numbers signifying North latitudes. The base station shall set this field to a value in the range -1296000 to 1296000 inclusive (corresponding to a range of -90° to +90°).

BASE_LONG - Base station longitude.

The base station shall set this field to its longitude in units of 0.25 second, expressed as a two's complement signed number with positive numbers signifying East longitude. The base station shall set this field to a value in the range -2592000 to 2592000 inclusive (corresponding to a range of -180° to +180°).

REG_DIST - Registration distance.

If mobile stations are to perform distance-based registration, the base station shall set this field to the non-zero "distance" beyond which the mobile station is to re-register (see 6.6.5.1.4). If mobile stations are not to perform distance-based registration, the base station shall set this field to 0.

SRCH_WIN_A - Search window size for the Active Set and Candidate Set.

The base station shall set this field to the value shown in Table 6.6.6.2.1-1 corresponding to the search window size to be used by mobile stations for the Active Set and Candidate Set.

SRCH_WIN_N - Search window size for the Neighbor Set.

The base station shall set this field to the value shown in Table 6.6.6.2.1-1 corresponding to the search window size to be used by mobile stations for the Neighbor Set.

SRCH_WIN_R - Search window size for the Remaining Set.

The base station shall set this field to the value shown in Table 6.6.6.2.1-1 corresponding to the search window size to be used by mobile stations for the Remaining Set.

NGHBR_MAX_AGE - Neighbor Set maximum AGE.

The base station shall set this field to the maximum AGE value beyond which mobile stations are to drop members from the Neighbor Set (see 6.6.6.2.6.3).

PWR_REP_THRESH - Power control reporting threshold.

The base station shall set this field to the number of bad frames (see 6.2.2.2) to be received in a measurement period on the Forward Fundamental Code Channel before mobile stations are to generate a *Power Measurement Report Message* (see 6.6.4.1.1). If the base station sets PWR_THRESH_ENABLE to '1', it shall not set this field to '00000'.

PWR_REP_FRAMES - Power control reporting frame count.

The base station shall set this field to the value such that the number given by

$$\lfloor 2^{(\mathrm{PWR\_REP\_FRAMES}/2)} \times 5 \rfloor \text{ frames}$$

is the number of frames over which mobile stations are to count frame errors.

PWR_THRESH-_ENABLE - Threshold report mode indicator.

If mobile stations are to generate threshold *Power Measurement Report Messages*, the base station shall set this field to '1'. If mobile stations are not to generate threshold *Power Measurement Report Messages*, the base station shall set this field to '0'.

PWR_PERIOD-_ENABLE - Periodic report mode indicator.

If mobile stations are to generate periodic *Power Measurement Report Messages*, the base station shall set this field to '1'. If mobile stations are not to generate periodic *Power Measurement Report Messages*, the base station shall set this field to '0'.

PWR_REP_DELAY - Power report delay.

The period that mobile stations wait following a *Power Measurement Report Message* before restarting frame counting for power control purposes.

The base station shall set this field to the power report delay value, in units of 4 frames (see 6.6.4.1.1).

RESCAN - Rescan indicator.

If mobile stations are to re-initialize and re-acquire the system upon receiving this message, the base station shall set this field to '1'; otherwise, the base station shall set this field to '0'.

**T_ADD** - Pilot detection threshold.

This value is used by the mobile station to trigger the transfer of a pilot from the Neighbor Set or Remaining Set to the Candidate Set (see 6.6.6.2.6) and to trigger the sending of the *Pilot Strength Measurement Message* initiating the handoff process (see 6.6.6.2.5.2).

The base station shall set this field to the pilot detection threshold, expressed as an unsigned binary number equal to $\lfloor -2 \times 10 \times \log_{10} E_c/I_o \rfloor$.

**T_DROP** - Pilot drop threshold.

This value is used by mobile stations to start a handoff drop timer for pilots in the Active Set and the Candidate Set (see 6.6.6.2.3).

The base station shall set this field to the pilot drop threshold, expressed as an unsigned binary number equal to $\lfloor -2 \times 10 \times \log_{10} E_c/I_o \rfloor$.

**T_COMP** - Active Set versus Candidate Set comparison threshold.

Mobile stations transmit a *Pilot Strength Measurement Message* when the strength of a pilot in the Candidate Set exceeds that of a pilot in the Active Set by this margin (see 6.6.6.2.5.2).

The base station shall set this field to the threshold Candidate Set pilot to Active Set pilot ratio, in units of 0.5 dB.

**T_TDROP** - Drop timer value.

Timer value after which an action is taken by mobile stations for a pilot that is a member of the Active Set or Candidate Set, and whose strength has not become greater than T_DROP. If the pilot is a member of the Active Set, a *Pilot Strength Measurement Message* is issued. If the pilot is a member of the Candidate Set, it will be moved to the Neighbor Set.

The base station shall set this field to the T_TDROP value shown in Table 6.6.6.2.3-1 corresponding to the drop timer value to be used by mobile stations.

**EXT_SYS_PARAMETER** - *Extended System Parameters Message* indicator.

The base station shall set this field to '1'.

**EXT_NGHBR_LIST** - *Extended Neighbor List Message* indicator.

The base station sets this field to '1' when it sends the *Extended Neighbor List Message* on the Paging Channel.

If the base station is operating in Band Class 1, it shall set this field to '1'. If the base station is operating in Band Class 0, it shall set this field to '0'.

GEN_NGHBR_LIST - *General Neighbor List Message* indicator.

If the base station is sending the *General Neighbor List Message* on the Paging Channel, it shall set this field to '1'. Otherwise, it shall set this field to '0'.

GLOBAL_REDIRECT - *Global Service Redirection Message* indicator.

If the base station is sending the *Global Service Redirection Message* on the Paging Channel, it shall set this field to '1'; otherwise, it shall set this field to '0'.

7.7.2.3.2.2 Access Parameters Message

The *Access Parameters Message* defines the parameters used by mobile stations when transmitting to the base station on an Access Channel. When the base station sends an *Access Parameters Message*, it shall use the following variable-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00000010') | 8 |
| PILOT_PN | 9 |
| ACC_MSG_SEQ | 6 |
| ACC_CHAN | 5 |
| NOM_PWR | 4 |
| INIT_PWR | 5 |
| PWR_STEP | 3 |
| NUM_STEP | 4 |
| MAX_CAP_SZ | 3 |
| PAM_SZ | 4 |
| PSIST(0-9) | 6 |
| PSIST(10) | 3 |
| PSIST(11) | 3 |
| PSIST(12) | 3 |
| PSIST(13) | 3 |
| PSIST(14) | 3 |
| PSIST(15) | 3 |
| MSG_PSIST | 3 |
| REG_PSIST | 3 |
| PROBE_PN_RAN | 4 |
| ACC_TMO | 4 |
| PROBE_BKOFF | 4 |
| BKOFF | 4 |

(continues on next page)

| Field | Length (bits) |
|---|---|
| MAX_REQ_SEQ | 4 |
| MAX_RSP_SEQ | 4 |
| AUTH | 2 |
| RAND | 0 or 32 |
| NOM_PWR_EXT | 1 |
| RESERVED | 6 |

MSG_TYPE - Message type.

The base station shall set this field to '00000010'.

PILOT_PN - Pilot PN sequence offset index.

The base station shall set this field to the pilot PN sequence offset for this base station, in units of 64 PN chips.

ACC_MSG_SEQ - Access parameters message sequence number.

The base station shall set this field to ACC_CONFIG_SEQ (see 7.6.2.2).

ACC_CHAN - Number of Access Channels.

The base station shall set this field to one less than the number of Access Channels associated with this Paging Channel.

NOM_PWR - Nominal transmit power offset.

The base station shall set this field to the correction factor to be used by mobile stations in the open loop power estimate, expressed as a two's complement value in units of 1 dB (see 6.1.2.3.1).

INIT_PWR - Initial power offset for access.

The base station shall set this field to the correction factor to be used by mobile stations in the open loop power estimate for the initial transmission on an Access Channel, expressed as a two's complement value in units of 1 dB (see 6.1.2.3.1).

PWR_STEP - Power increment.

The base station shall set this field to the value by which mobile stations are to increase their transmit power between successive access probes in an access probe sequence, in units of 1 dB.

NUM_STEP - Number of access probes.

The base station shall set this field to one less than the maximum number of access probes mobile stations are to transmit in a single access probe sequence.

MAX_CAP_SZ - Maximum Access Channel message capsule size.

The base station shall set this field to the value in the range 0 to 7, three less than the maximum number of Access Channel frames in an Access Channel message capsule.

PAM_SZ - Access Channel preamble length.

The base station shall set this field to one less than the number of Access Channel frames that mobile stations are to transmit in each Access Channel preamble.

PSIST(0-9) - Persistence value for access overload classes 0 through 9.

If mobile stations in access overload classes 0 through 9 are permitted to transmit requests on the Access Channel, the base station shall set this field to the persistence value to be used. If such mobile stations are not permitted to transmit requests on the Access Channel, the base station shall set this field to '111111'.

PSIST(10) - Persistence value for access overload class 10 (test mobile stations).

If mobile stations in access overload class 10 are permitted to transmit requests on the Access Channel, the base station shall set this field to the persistence value to be used. If such mobile stations are not permitted to transmit requests on the Access Channel, the base station shall set this field to '111'.

PSIST(11) - Persistence value for access overload class 11 (emergency mobile stations).

If mobile stations in access overload class 11 are permitted to transmit requests on the Access Channel, the base station shall set this field to the persistence value to be used. If such mobile stations are not permitted to transmit requests on the Access Channel, the base station shall set this field to '111'.

PSIST(12) - Persistence value for access overload class 12.

If mobile stations in access overload class 12 are permitted to transmit requests on the Access Channel, the base station shall set this field to the persistence value to be used. If such mobile stations are not permitted to transmit requests on the Access Channel, the base station shall set this field to '111'.

PSIST(13) - Persistence value for access overload class 13.

If mobile stations in access overload class 13 are permitted to transmit requests on the Access Channel, the base station shall set this field to the persistence value to be used. If such mobile stations are not permitted to transmit requests on the Access Channel, the base station shall set this field to '111'.

PSIST(14) - Persistence value for access overload class 14.

If mobile stations in access overload class 14 are permitted to transmit requests on the Access Channel, the base station shall set this field to the persistence value to be used. If such mobile stations are not permitted to transmit requests on the Access Channel, the base station shall set this field to '111'.

PSIST(15) - Persistence value for access overload class 15.

If mobile stations in access overload class 15 are permitted to transmit requests on the Access Channel, the base station shall set this field to the persistence value to be used. If such mobile stations are not permitted to transmit requests on the Access Channel, the base station shall set this field to '111'.

MSG_PSIST - Persistence modifier for Access Channel attempts for message transmissions.

A mobile station multiplies its transmission probability by $2^{-MSG\_PSIST}$ for such attempts.

The base station shall set this field to the persistence modifier for Access Channel attempts for message transmissions.

REG_PSIST - Persistence modifier for Access Channel attempts for registrations which are not responses to the *Registration Request Order*.

A mobile station multiplies its transmission probability by $2^{-REG\_PSIST}$ for such attempts.

The base station shall set this field to the persistence modifier for Access Channel attempts for registrations which are not responses to the *Registration Request Order*.

PROBE_PN_RAN - Time randomization for Access Channel probes.

A mobile station delays its transmission from System Time by RN PN chips, where RN is a number determined by hashing between 0 and $2^{PROBE\_PN\_RAN} - 1$ PN chips.

The base station shall set this field to the value in the range 0 to 9 inclusive such that the time randomization range is $2^{PROBE\_PN\_RAN} - 1$ PN chips.

ACC_TMO - Acknowledgment timeout.

The base station shall set this field to two less than the length of time mobile stations are to wait after the end of an Access Channel transmission before determining that the base station did not receive the transmission, in units of 80 ms.

PROBE_BKOFF - Access Channel probe backoff range.

The base station shall set this field to one less than the maximum number of slots mobile stations are to delay due to random backoff between consecutive access probes.

BKOFF - Access Channel probe sequence backoff range.

The base station shall set this field to one less than the maximum number of slots mobile stations are to delay due to random backoff between successive access probe sequences and before the first access probe sequence of a response access.

MAX_REQ_SEQ - Maximum number of access probe sequences for an Access Channel request.

The base station shall set this field to the maximum number of access probe sequences mobile stations are to transmit for an Access Channel request. The base station shall set this field to a value greater than 0.

MAX_RSP_SEQ - Maximum number of access probe sequences for an Access Channel response.

The base station shall set this field to the maximum number of access probe sequences mobile stations are to transmit for an Access Channel response. The base station shall set this field to a value greater than 0.

AUTH - Authentication mode.

If mobile stations are to include standard authentication data in Access Channel messages, the base station shall set this field to '01'. If mobile stations are not to include authentication data in Access Channel messages, the base station shall set this field to '00'. All other values are reserved.

RAND - Random challenge value.

If the AUTH field is set to '01', the base station shall set this field to the random challenge value to be used by mobile stations for authentication. If the AUTH field is set to any other value, the base station shall omit this field.

NOM_PWR_EXT - Extended nominal transmit power.

If the base station is operating in Band Class 0, it shall set this field to '0'.

If the base station is operating in Band Class 1, then the field shall be set as follows: If the correction factor to be used by mobile stations in the open loop power estimate is between -24 dB and -9 dB inclusive, the base station shall set this field to '1'. Otherwise (the correction factor is in the range -8 dB to 7 dB inclusive), the base station shall set this field to '0'.

RESERVED - Reserved bits.

The base station shall set this field to '000000'.

7.7.2.3.2.3 Neighbor List Message

When the base station sends a *Neighbor List Message*, it shall use the following variable-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00000011') | 8 |
| PILOT_PN | 9 |
| CONFIG_MSG_SEQ | 6 |
| PILOT_INC | 4 |
| Zero or more occurrences of the following record: | |
| NGHBR_CONFIG | 3 |
| NGHBR_PN | 9 |
| RESERVED | 0 - 7 (as needed) |

MSG_TYPE - Message type.

The base station shall set this field to '00000011'.

PILOT_PN - Pilot PN sequence offset index.

The base station shall set this field to the pilot PN sequence offset for this base station, in units of 64 PN chips.

CONFIG_MSG_SEQ - Configuration message sequence number.

The base station shall set this field to CONFIG_SEQ (see 7.6.2.2).

PILOT_INC - Pilot PN sequence offset index increment.

A mobile station searches for Remaining Set pilots at pilot PN sequence index values that are multiples of this value.

The base station shall set this field to the pilot PN sequence increment, in units of 64 PN chips, that mobile stations are to use for searching the Remaining Set. The base station should set this field to the largest increment such that the pilot PN sequence offsets of all its neighbor base stations are integer multiples of that increment.

The base station shall set this field to a value in the range 1 to 15 inclusive.

The base station shall include one occurrence of the following two-field record for each member mobile stations are to place in their Neighbor Sets. The base station may include zero or more occurrences of the following record.

NGHBR_CONFIG - Neighbor configuration.

The base station shall set this field to the value shown in Table 7.7.2.3.2.3-1 corresponding to the configuration of this neighbor.

**Table 7.7.2.3.2.3-1. Neighbor Configuration Field**

| Value (bin) | Neighbor Configuration |
|---|---|
| 000 | The neighbor base station has the same configuration as the current base station. |
| 001 | The neighbor base station has a different configuration. It does have a Primary Paging Channel on the current CDMA frequency assignment. |
| 010 | The neighbor base station does not have a Paging Channel on the current CDMA frequency assignment. It does have a Primary Paging Channel on the first CDMA Channel listed in the *CDMA Channel List Message* transmitted by the current base station. |
| 011 | The neighbor base station configuration is unknown. |
| 100-111 | Reserved. |

NGHBR_PN - Neighbor pilot PN sequence offset index.

The base station shall set this field to the pilot PN sequence offset for this neighbor, in units of 64 PN chips.

RESERVED - Reserved bits.

The base station shall add reserved bits as needed in order to make the length of the entire message equal to an integer number of octets. The base station shall set these bits to '0'.

7.7.2.3.2.4 CDMA Channel List Message

When the base station sends a *CDMA Channel List Message*, it shall use the following variable-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00000100') | 8 |
| PILOT_PN | 9 |
| CONFIG_MSG_SEQ | 6 |
| One or more occurrences of the following field: | |
| CDMA_FREQ | 11 |
| RESERVED | 0 - 7 (as needed) |

MSG_TYPE - Message type.

The base station shall set this field to '00000100'.

PILOT_PN - Pilot PN sequence offset index.

The base station shall set this field to the pilot PN sequence offset for this base station, in units of 64 PN chips.

CONFIG_MSG_SEQ - Configuration message sequence number.

The base station shall set this field to CONFIG_SEQ (see 7.6.2.2).

CDMA_FREQ - CDMA Channel frequency assignment.

The order in which occurrences of this field are included gives the designations of the supported CDMA Channels as CDMA Channel 1 through CDMA Channel N.

The base station shall include one occurrence of this field for each CDMA Channel containing a Paging Channel that is supported by this base station. If the supported CDMA Channels are in the preferred set of CDMA frequency assignments (see 6.1.1.1), the base station shall include their occurrences of this field first.

The base station shall set each occurrence of this field to the CDMA channel number corresponding to the CDMA frequency assignment for that CDMA Channel (see 7.1.1.1).

RESERVED - Reserved bits.

The base station shall add reserved bits as needed in order to make the length of the entire message equal to an integer number of octets. The base station shall set these bits to '0'.

#### 7.7.2.3.2.5 Reserved

#### 7.7.2.3.2.6 Reserved

#### 7.7.2.3.2.7 Order Message

When the base station sends an *Order Message*, it shall use the following variable-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00000111') | 8 |
| One or more occurrences of the following record: | |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| VALID_ACK | 1 |
| ADDR_TYPE | 3 |
| ADDR_LEN | 4 |
| ADDRESS | 8 × ADDR_LEN |
| ORDER | 6 |
| ADD_RECORD_LEN | 3 |
| order-specific fields (if used) | 8 × ADD_RECORD_LEN |
| RESERVED | 2 |

MSG_TYPE - Message type.

The base station shall set this field to '00000111'.

The base station shall include one or more occurrences of the following variable-length order record:

ACK_SEQ - Acknowledgment sequence number.

If VALID_ACK is set to '1' in this message, the base station shall set this field to the MSG_SEQ field from the most recently received Access Channel message requiring an acknowledgment from the mobile station addressed by this order (see 7.6.3.1.1); otherwise, the base station may set this field to any value.

MSG_SEQ - Message sequence number.

The base station shall set this field to the message sequence number for this order (see 7.6.2.1.4).

ACK_REQ - Acknowledgment required indicator.

If the mobile station is to acknowledge this order, the base station shall set this field to '1'. If the mobile station is not to acknowledge this order, the base station shall set this field to '0' (see 7.6.3.1.1).

VALID_ACK - Valid acknowledgment indicator.

To acknowledge the most recently received Access Channel message from the mobile station, the base station shall set this field to '1'. If this order record does not acknowledge the most recently received Access Channel message from the mobile station, the base station shall set this field to '0'.

ADDR_TYPE - Address type.

See 7.7.2.3.1.

ADDR_LEN - Address field length.

See 7.7.2.3.1.

ADDRESS - Mobile station address.

See 7.7.2.3.1.

ORDER - Order code.

The base station shall set this field to the ORDER code (see 7.7.4) for this type of order.

ADD_RECORD_LEN - Additional record length.

The base station shall set this field to the number of octets in the order-specific fields included in this order record.

order-specific fields - Order-specific fields.

The base station shall include order-specific fields as specified in 7.7.4 for this type of order.

RESERVED - Reserved bits.

The base station shall set this field to '00'.

7.7.2.3.2.8 Channel Assignment Message

When the base station sends a *Channel Assignment Message*, it shall use the following variable-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00001000') | 8 |
| One or more occurrences of the following record: | |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| VALID_ACK | 1 |
| ADDR_TYPE | 3 |
| ADDR_LEN | 4 |
| ADDRESS | 8 × ADDR_LEN |
| ASSIGN_MODE | 3 |
| ADD_RECORD_LEN | 3 |
| Additional record fields | 8 × ADD_RECORD_LEN |
| RESERVED | 0 - 7 (as needed) |

If ASSIGN_MODE = '000', the additional record fields shall be:

| | |
|---|---|
| FREQ_INCL | 1 |
| CODE_CHAN | 8 |
| CDMA_FREQ | 0 or 11 |
| FRAME_OFFSET | 4 |
| ENCRYPT_MODE | 2 |
| RESERVED | 0 - 7 (as needed) |

If ASSIGN_MODE = '001', the additional record fields shall be:

| | |
|---|---|
| RESPOND | 1 |
| FREQ_INCL | 1 |
| CDMA_FREQ | 0 or 11 |

One or more occurrences of the following field:

| | |
|---|---|
| PILOT_PN | 9 |

| | |
|---|---|
| RESERVED | 0 - 7 (as needed) |

If ASSIGN_MODE = '010', the additional record fields shall be:

| | |
|---|---|
| RESPOND | 1 |
| ANALOG_SYS | 1 |
| USE_ANALOG_SYS | 1 |
| BAND_CLASS | 5 |

If ASSIGN_MODE = '011', the additional record fields shall be:

| | |
|---|---|
| SID | 15 |
| VMAC | 3 |
| ANALOG_CHAN | 11 |
| SCC | 2 |
| MEM | 1 |
| AN_CHAN_TYPE | 2 |
| DSCC_MSB | 1 |
| BAND_CLASS | 5 |

If ASSIGN_MODE = '100', the additional record fields shall be:

| | |
|---|---|
| FREQ_INCL | 1 |
| RESERVED | 3 |
| BYPASS_ALERT_ANSWER | 1 |
| DEFAULT_CONFIG | 3 |
| GRANTED_MODE | 2 |
| CODE_CHAN | 8 |
| FRAME_OFFSET | 4 |
| ENCRYPT_MODE | 2 |
| BAND_CLASS | 0 or 5 |
| CDMA_FREQ | 0 or 11 |

If ASSIGN_MODE = '101', the additional record fields shall be:

| | |
|---|---|
| RESPOND | 1 |
| FREQ_INCL | 1 |
| BAND_CLASS | 0 or 5 |
| CDMA_FREQ | 0 or 11 |

One or more occurrences of the following field:

| | |
|---|---|
| PILOT_PN | 9 |

| | |
|---|---|
| RESERVED | 0 - 7 (as needed) |

MSG_TYPE - Message type.

The base station shall set this field to '00001000'.

The base station shall include one or more occurrences of the following variable-length assignment record:

If VALID_ACK is set to '1' in this message, the base station shall set this field to the MSG_SEQ field from the most recently received Access Channel message requiring an acknowledgment from the mobile station addressed by this assignment (see 7.6.3.1.1); otherwise, the base station may set this field to any value.

MSG_SEQ - Message sequence number.

The base station shall set this field to the message sequence number for this assignment (see 7.6.2.1.4).

ACK_REQ - Acknowledgment required indicator.

If the mobile station is to acknowledge this message record, the base station shall set this field to '1'. If the mobile station is not to acknowledge this message record, the base station shall set this field to '0' (see 7.6.3.1.1).

VALID_ACK - Valid acknowledgment indicator.

To acknowledge the most recently received Access Channel message from the mobile station, the base station shall set this field to '1'. If this assignment record does not acknowledge the most recently received Access Channel message from the mobile station, the base station shall set this field to '0'.

ADDR_TYPE - Address type.

See 7.7.2.3.1.

ADDR_LEN - Address field length.

See 7.7.2.3.1.

ADDRESS - Mobile station address.

See 7.7.2.3.1.

ASSIGN_MODE - Assignment mode.

The base station shall set this field to the value shown in Table 7.7.2.3.2.8-1 corresponding to the assignment mode for this assignment.

**Table 7.7.2.3.2.8-1. Assignment Mode**

| Value (binary) | Assignment Mode |
|---|---|
| 000 | Traffic Channel Assignment (Band Class 0 only) |
| 001 | Paging Channel Assignment (Band Class 0 only) |
| 010 | Acquire Analog System |
| 011 | Analog Voice Channel Assignment |
| 100 | Extended Traffic Channel Assignment |
| 101 | Extended Paging Channel Assignment |
| All other values are reserved. | |

ADD_RECORD_LEN - Additional record length.

The base station shall set this field to the number of octets in the additional record fields included in this assignment record.

Additional record fields - Additional record fields.

The additional record fields are determined by the value of ASSIGN_MODE, as described below.

RESERVED - Reserved bits.

The base station shall add reserved bits as needed in order to make the length of the entire message equal to an integer number of octets. The base station shall set these bits to '0'.

If the ASSIGN_MODE field is set to '000', the base station shall include the following fields:

FREQ_INCL - Frequency included indicator.

If the CDMA_FREQ field is included in this assignment record, the base station shall set this bit to '1'. If the CDMA_FREQ field is not included in this assignment record, the base station shall set this bit to '0'.

CODE_CHAN - Code channel.

The base station shall set this field to the code channel index (see 7.1.3.1.8) in the range 1 to 63 inclusive that the mobile station is to use on the Fundamental Code Channel of the Forward Traffic Channel.

CDMA_FREQ - Frequency assignment.

If the FREQ_INCL bit is set to '1', the base station shall set this field to the CDMA Channel number corresponding to the CDMA frequency assignment for the CDMA Channel containing the Forward Traffic Channel the mobile station is to use. If the FREQ_INCL bit is set to '0', the base station shall omit this field.

FRAME_OFFSET - Frame offset.

The Forward and Reverse Traffic Channel frames are delayed FRAME_OFFSET × 1.25 ms relative to system timing (see 7.1.3.5.1).

The base station shall set this field to the Forward and Reverse Traffic Channel frame offset.

ENCRYPT_MODE - Message encryption mode.

The base station shall set this field to the ENCRYPT_MODE value shown in Table 7.7.2.3.2.8-2 corresponding to the encrypting mode that is to be used for messages sent on the Forward and Reverse Traffic Channels, as specified in 6.3.12.2.

**Table 7.7.2.3.2.8-2. Message Encryption Modes**

| ENCRYPT_MODE Field (binary) | Encryption Mode Used |
|---|---|
| 00 | Encryption disabled |
| 01 | Basic encryption of call control messages |
| 10 | Enhanced encryption of call control messages |
| 11 | Reserved |

RESERVED - Reserved bits.

The base station shall add reserved bits as needed in order to make the total length of the fields after the preceding ADD_RECORD_LEN field through this RESERVED field equal to an integer number of octets. The base station shall set these bits to '0'.

If the ASSIGN_MODE field is set to '001', the base station shall include the following fields:

RESPOND - Respond on new Access Channel indicator.

If the mobile station is to retransmit an *Origination Message* or *Page Response Message* after processing this channel assignment, the base station shall set this field to '1'. The base station may set this field to '0' only in response to a *Page Response Message*.

FREQ_INCL - Frequency included indicator.

If the CDMA_FREQ field is included in this assignment record, the base station shall set this bit to '1'. If the CDMA_FREQ field is not included in this assignment record, the base station shall set this bit to '0'.

CDMA_FREQ - Frequency assignment.

If the FREQ_INCL bit is set to '1', the base station shall set this field to the CDMA Channel number corresponding to the CDMA frequency assignment for the CDMA Channel containing the Paging Channel the mobile station is to use. If the FREQ_INCL bit is set to '0', the base station shall omit this field.

PILOT_PN - Pilot PN sequence offset index.

The base station shall include one occurrence of this field for each base station whose Paging Channel may be monitored by the mobile station. For each occurrence, the base station shall set this field to the pilot PN sequence offset for a base station, in units of 64 PN chips. The base station having this pilot PN sequence offset should support a Primary Paging Channel with the same Paging Channel rate as the current base station.

RESERVED - Reserved bits.

The base station shall add reserved bits as needed in order to make the total length of the fields, after the preceding ADD_RECORD_LEN field through this RESERVED field, equal to an integer number of octets. The base station shall set these bits to '0'.

If the ASSIGN_MODE field is set to '010', the base station shall include the following fields:

RESPOND - Respond on analog control channel indicator.

If the mobile station is to retransmit an *Origination Message* or *Page Response Message* (see 2.7.1.1) on the analog control channel after processing this channel assignment, the base station shall set this field to '1'. The base station may set this field to '0' only in response to a *Page Response Message*.

ANALOG_SYS - System indicator.

If USE_ANALOG_SYS is equal to '0', the base station shall set this field to '0'. Otherwise, the base station shall set this field to '0' if the mobile station is to use analog system A, or to '1' if the mobile station is to use analog system B.

USE_ANALOG_SYS - Use analog system indicator.

The base station shall set this field to '1' to direct the mobile station to the analog system specified by ANALOG_SYS; otherwise, the base station shall set this field to '0'.

BAND_CLASS - Band class.

The base station shall set this field according to values defined in TSB58-A.

If the ASSIGN_MODE field is set to '011', the base station shall include the following fields:

SID - System identification of the analog system.

The base station shall set this field to the system identification of the analog system supporting the assigned voice channel for this assignment (see 2.3.8).

VMAC - Voice mobile station attenuation code.

The base station shall set this field to the mobile station power level associated with the assigned voice channel for this assignment (see 2.1.2).

ANALOG_CHAN - Voice channel number.

The base station shall set this field to the voice channel number for this assignment (see 2.1.1.1).

SCC - SAT color code. The base station shall set this field to the supervisory audio tone associated with the assigned voice channel. If the assignment is to a narrow analog channel, the base station shall set this field to the two least significant bits of the DSCC.

MEM - Message encryption mode indicator.

If analog control message encryption is to be enabled on the assigned forward and reverse analog voice channels, the base station shall set this bit to '1'; otherwise, the base station shall set this bit to '0'.

AN_CHAN_TYPE - Analog voice channel type.

The base station shall set this field to the analog channel type as specified in Table 7.7.3.3.2.6-1. If the mobile station does not have narrow analog capability the bits shall be set to '00'.

DSCC_MSB - Digital supervisory audio tone color code most significant bit.

The base station shall set this field to '0' when directing handoff to a wide analog channel. The base station shall set this field to the most significant bit of the DSCC when directing handoff to a narrow analog channel.

BAND_CLASS - Band class.

The base station shall set this field according to values defined in TSB58-A.

If the ASSIGN_MODE field is set to '100', the base station shall include the following fields:

FREQ_INCL - Frequency included indicator.

If the BAND_CLASS and CDMA_FREQ fields are included in this assignment record, the base station shall set this bit to '1'. If the BAND_CLASS and CDMA_FREQ fields are not included in this assignment record, the base station shall set this bit to '0'.

RESERVED - Reserved bits.

The base station shall set this field to '000'.

BYPASS_ALERT-_ANSWER - Bypass indicator.

If the MOB_P_REV of the current band class of the mobile station is less than or equal to three, the base station shall set this field to '0'. Otherwise, the base station shall set this field as follows.

If the base station has received a *Page Response Message* that specifies a packet data service option, and the mobile station is to bypass the *Waiting for Order Substate* and the *Waiting for Mobile Station Answer Substate*, the base station shall set this field to '1'. Otherwise, the base station shall set this field to '0'.

DEFAULT_CONFIG - Default Configuration.

If the GRANTED_MODE field is set to '00', the base station shall set this field as specified in Table 7.7.2.3.2.8-3 to indicate an initial multiplex option and rate set for the Forward and Reverse Traffic channels.

**Table 7.7.2.3.2.8-3. Default Configuration**

| Value (binary) | Default Configuration |
|---|---|
| 000 | Multiplex Option 1 and Rate Set 1 for both the Forward Traffic Channel and the Reverse Traffic Channel |
| 001 | Multiplex Option 2 and Rate Set 2 for both the Forward Traffic Channel and the Reverse Traffic Channel |
| 010 | Multiplex Option 1 and Rate Set 1 for the Forward Traffic channel; Multiplex Option 2 and Rate Set 2 for the Reverse Traffic channel |
| 011 | Multiplex Option 2 and Rate Set 2 for the Forward Traffic channel; Multiplex Option 1 and Rate Set 1 for the Reverse Traffic channel |
| All other values are reserved. | |

GRANTED_MODE - Granted mode.

The base station shall set this field to '00' to indicate that the mobile station is to use an initial service configuration consisting of the multiplex option and rate set defined by the DEFAULT_CONFIG field for the Forward and Reverse Traffic channels, and to indicate that service negotiation is to take place before the base station sends the first *Service Connect Message*.

The base station shall set this field to '01' to indicate that the mobile station is to use an initial service configuration consisting of the default multiplex option and transmission rates corresponding to the service option requested by the mobile station either in the *Origination Message* or *Page Response Message*, and to indicate that service negotiation is to take place before the base station sends the first *Service Connect Message*.

The base station shall set this field to '10' to indicate that the mobile station is to use an initial service configuration consisting of the default multiplex option and transmission rates corresponding to the service option requested by the mobile station either in the *Origination Message* or *Page Response Message*, and to indicate that service negotiation is not to take place before the base station sends the first *Service Connect Message*.

CODE_CHAN - Code channel.

The base station shall set this field to the code channel index (see 7.1.3.1.9) in the range 1 to 63 inclusive that the mobile station is to use on the Fundamental Code Channel of the Forward Traffic Channel.

FRAME_OFFSET - Frame offset.

The Forward and Reverse Traffic Channel frames are delayed FRAME_OFFSET × 1.25 ms relative to system timing (see 7.1.3.5.1).

The base station shall set this field to the Forward and Reverse Traffic Channel frame offset.

ENCRYPT_MODE - Message encryption mode.

The base station shall set this field to the ENCRYPT_MODE value shown in Table 7.7.2.3.2.8-2 corresponding to the encrypting mode that is to be used for messages sent on the Forward and Reverse Traffic Channels, as specified in 2.3.12.2.

BAND_CLASS - Band class.

If the FREQ_INCL bit is set to '1', the base station shall set this field to the CDMA band class, as specified in TSB58-A, corresponding to the CDMA frequency assignment for the CDMA Channel containing the Forward Traffic Channel the mobile station is to use. If the FREQ_INCL bit is set to '0', the base station shall omit this field.

CDMA_FREQ - Frequency assignment.

If the FREQ_INCL bit is set to '1', the base station shall set this field to the CDMA Channel number, in the specified CDMA band class, corresponding to the CDMA frequency assignment for the CDMA Channel containing the Forward Traffic Channel the mobile station is to use. If the FREQ_INCL bit is set to '0', the base station shall omit this field.

If the ASSIGN_MODE field is set to '101', the base station shall include the following fields:

RESPOND - Respond on new Access Channel indicator.

If the mobile station is to retransmit an *Origination Message* or *Page Response Message* after processing this channel assignment, the base station shall set this field to '1'. The base station may set this field to '0' only in response to a *Page Response Message*.

FREQ_INCL - Frequency included indicator.

If the BAND_CLASS and CDMA_FREQ fields are included in this assignment record, the base station shall set this bit to '1'. If the BAND_CLASS and CDMA_FREQ fields are not included in this assignment record, the base station shall set this bit to '0'.

BAND_CLASS - Band class.

If the FREQ_INCL bit is set to '1', the base station shall set this field to the CDMA band class, as specified in TSB58-A, corresponding to the CDMA frequency assignment for the CDMA Channel containing the Paging Channel the mobile station is to use. If the FREQ_INCL bit is set to '0', the base station shall omit this field.

CDMA_FREQ - Frequency assignment.

If the FREQ_INCL bit is set to '1', the base station shall set this field to the CDMA Channel number, in the specified CDMA band class, corresponding to the CDMA frequency assignment for the CDMA Channel containing the Paging Channel the mobile station is to use. If the FREQ_INCL bit is set to '0', the base station shall omit this field.

PILOT_PN - Pilot PN sequence offset index.

The base station shall include one occurrence of this field for each base station whose Paging Channel may be monitored by the mobile station. For each occurrence, the base station shall set this field to the pilot PN sequence offset for a base station, in units of 64 PN chips. The base station having this pilot PN sequence offset should support a Primary Paging Channel with the same Paging Channel rate as the current base station.

RESERVED - Reserved bits.

The base station shall add reserved bits as needed in order to make the total length of the fields after the preceding ADD_RECORD_LEN field through this RESERVED field equal to an integer number of octets. The base station shall set these bits to '0'.

7.7.2.3.2.9 Data Burst Message

When the base station sends a *Data Burst Message* on the Paging Channel, it shall use the following variable-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00001001') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| VALID_ACK | 1 |
| ADDR_TYPE | 3 |
| ADDR_LEN | 4 |
| ADDRESS | 8 × ADDR_LEN |
| MSG_NUMBER | 8 |
| BURST_TYPE | 6 |
| NUM_MSGS | 8 |
| NUM_FIELDS | 8 |
| NUM_FIELDS occurrences of the following field: | |
| CHARi | 8 |
| | |
| RESERVED | 5 |

MSG_TYPE - Message type.

The base station shall set this field to '00001001'.

ACK_SEQ - Acknowledgment sequence number.

If VALID_ACK is set to '1' in this message, the base station shall set this field to the MSG_SEQ field from the most recently received Access Channel message requiring an acknowledgment from the mobile station addressed by this message (see 7.6.3.1.1); otherwise, the base station may set this field to any value.

MSG_SEQ - Message sequence number.

The base station shall set this field to the message sequence number for this message (see 7.6.2.1.4).

ACK_REQ - Acknowledgment required indicator.

If the mobile station is to acknowledge this message, the base station shall set this field to '1'. If the mobile station is not to acknowledge this message, the base station shall set this field to '0' (see 7.6.3.1.1).

VALID_ACK - Valid acknowledgment indicator.

To acknowledge the most recently received Access Channel message from the mobile station, the base station shall set this field to '1'. If this message does not acknowledge the most recently received Access Channel message from the mobile station, the base station shall set this field to '0'.

ADDR_TYPE - Address type.

See 7.7.2.3.1.

ADDR_LEN - Address field length.

See 7.7.2.3.1.

ADDRESS - Mobile station address.

See 7.7.2.3.1.

MSG_NUMBER - Message number.

The base station shall set this field to the number of this message within the data burst stream.

BURST_TYPE - Data burst type.

The base station shall set the value of this field for the type of this data burst as defined in TSB58-A. If the mobile station sets this field equal to '111110', it shall set the first two CHARi fields of this message equal to EXTENDED_BURST_TYPE_INTERNATIONAL as described in the definition of CHARi below. If the base station sets this field equal to '111111', it shall set the first two CHARi fields of this message equal to the EXTENDED_BURST_TYPE as described in the definition of CHARi below.

NUM_MSGS - Number of messages in the data burst stream.

The base station shall set this field to the number of messages in this data burst stream.

NUM_FIELDS - Number of characters in this message.

The base station shall set this field to the number of occurrences of the CHARi field included in this message.

CHARi - Character.

The base station shall include NUM_FIELDS occurrences of this field. The base station shall set these fields to the corresponding octet of the data burst stream.

If the BURST_TYPE field of this message is equal to '111110', the first two CHARi octets shall represent a 16 bit EXTENDED_BURST_TYPE_INTERNATIONAL field, which is encoded as shown below. The first ten bits of this field contain a binary mapping of the Mobile Country Code (MCC) associated with the national standards organization administering the use of the remaining octets of the message. Encoding of the MCC shall be as specified in 6.3.1.3. The remaining six bits of the EXTENDED_BURST_TYPE_INTERNATIONAL field shall specify the COUNTRY_BURST_TYPE. The mobile station shall set the value of the COUNTRY_BURST_TYPE according to the type of this data burst as defined in standards governed by the country where this data burst type is to be used.

| Field | Length (bits) |
|---|---|
| Mobile Country Code | 10 |
| COUNTRY_BURST_TYPE | 6 |
| Remaining CHARi fields | 8 × (NUM_FIELDS - 2) |

If the BURST_TYPE field of this message is equal to '111111', the first two CHARi octets shall represent a single, 16 bit, EXTENDED_BURST_TYPE field, as shown below. The base station shall set the value of the EXTENDED_BURST_TYPE according to the type of this data burst as defined in TSB58-A.

| Field | Length (bits) |
|---|---|
| EXTENDED_BURST_TYPE (first two CHARi fields) | 16 |
| Remaining CHARi fields | 8 x (NUM_FIELDS - 2) |

RESERVED - Reserved bits.

The base station shall set this field to '00000'.

#### 7.7.2.3.2.10 Authentication Challenge Message

When the base station sends an *Authentication Challenge Message* on the Paging Channel, it shall use the following fixed-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00001010') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| VALID_ACK | 1 |
| ADDR_TYPE | 3 |
| ADDR_LEN | 4 |
| ADDRESS | 8 × ADDR_LEN |
| RANDU | 24 |
| RESERVED | 3 |

MSG_TYPE - Message type.

The base station shall set this field to '00001010'.

ACK_SEQ - Acknowledgment sequence number.

If VALID_ACK is set to '1' in this message, the base station shall set this field to the MSG_SEQ field from the most recently received Access Channel message requiring an acknowledgment from the mobile station addressed by this message (see 7.6.3.1.1); otherwise, the base station may set this field to any value.

MSG_SEQ - Message sequence number.

The base station shall set this field to the message sequence number for this message (see 7.6.2.1.4).

ACK_REQ - Acknowledgment required indicator.

If the mobile station is to acknowledge this message, the base station shall set this field to '1'. If the mobile station is not to acknowledge this message, the base station shall set this field to '0' (see 7.6.3.1.1).

VALID_ACK - Valid acknowledgment indicator.

To acknowledge the most recently received Access Channel message from the mobile station, the base station shall set this field to '1'. If this message does not acknowledge the most recently received Access Channel message from the mobile station, the base station shall set this field to '0'.

| | | |
|---|---|---|
| ADDR_TYPE | - | Address type. See 7.7.2.3.1. |
| ADDR_LEN | - | Address field length. See 7.7.2.3.1. |
| ADDRESS | - | Mobile station address. See 7.7.2.3.1. |
| RANDU | - | Random challenge data. The base station shall set this field to the random challenge data (see 6.3.12.1.5). |
| RESERVED | - | Reserved bits. The base station shall set this field to '000'. |

7.7.2.3.2.11 SSD Update Message

When the base station sends an *SSD Update Message* on the Paging Channel, it shall use the following fixed-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00001011') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| VALID_ACK | 1 |
| ADDR_TYPE | 3 |
| ADDR_LEN | 4 |
| ADDRESS | 8 × ADDR_LEN |
| RANDSSD | 56 |
| RESERVED | 3 |

MSG_TYPE - Message type.

The base station shall set this field to '00001011'.

ACK_SEQ - Acknowledgment sequence number.

If VALID_ACK is set to '1' in this message, the base station shall set this field to the MSG_SEQ field from the most recently received Access Channel message requiring an acknowledgment from the mobile station addressed by this message (see 7.6.3.1.1); otherwise, the base station may set this field to any value.

MSG_SEQ - Message sequence number.

The base station shall set this field to the acknowledgment sequence number for this message (see 7.6.2.1.4).

ACK_REQ - Acknowledgment required indicator.

If the mobile station is to acknowledge this message, the base station shall set this field to '1'. If the mobile station is not to acknowledge this message, the base station shall set this field to '0' (see 7.6.3.1.1).

VALID_ACK - Valid acknowledgment indicator.

To acknowledge the most recently received Access Channel message from the mobile station, the base station shall set this field to '1'. If this message does not acknowledge the most recently received Access Channel message from the mobile station, the base station shall set this field to '0'.

ADDR_TYPE - Address type.
See 7.7.2.3.1.

ADDR_LEN - Address field length.
See 7.7.2.3.1.

ADDRESS - Mobile station address.
See 7.7.2.3.1.

RANDSSD - Random data for the computation of SSD.
The base station shall set this field as specified in 6.3.12.1.9.

RESERVED - Reserved bits.
The base station shall set this field to '000'.

7.7.2.3.2.12 Feature Notification Message

When the base station sends a *Feature Notification Message* on the Paging Channel, it shall use the following variable-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00001100') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| VALID_ACK | 1 |
| ADDR_TYPE | 3 |
| ADDR_LEN | 4 |
| ADDRESS | 8 × ADDR_LEN |
| RELEASE | 1 |
| One or more occurrences of the following record: | |
| RECORD_TYPE | 8 |
| RECORD_LEN | 8 |
| Type-specific fields | 8 × RECORD_LEN |
| RESERVED | 2 |

MSG_TYPE - Message type.

The base station shall set this field to '00001100'.

ACK_SEQ - Acknowledgment sequence number.

If VALID_ACK is set to '1' in this message, the base station shall set this field to the MSG_SEQ field from the most recently received Access Channel message requiring an acknowledgment from the mobile station addressed by this message (see 7.6.3.1.1); otherwise, the base station may set this field to any value.

MSG_SEQ - Message sequence number.

The base station shall set this field to the acknowledgment sequence number for this message (see 7.6.2.1.4).

ACK_REQ - Acknowledgment required indicator.

If the mobile station is to acknowledge this message, the base station shall set this field to '1'. If the mobile station is not to acknowledge this message, the base station shall set this field to '0' (see 7.6.3.1.1).

VALID_ACK - Valid acknowledgment indicator.

To acknowledge the most recently received Access Channel message from the mobile station, the base station shall set this field to '1'. If this message does not acknowledge the most recently received Access Channel message from the mobile station, the base station shall set this field to '0'.

ADDR_TYPE - Address type.

See 7.7.2.3.1.

ADDR_LEN - Address field length.

See 7.7.2.3.1.

ADDRESS - Mobile station address.

See 7.7.2.3.1.

RELEASE - Origination completion indicator.

The base station shall set this field to '1' if this message is used to complete an origination request from the mobile station; otherwise, the base station shall set this field to '0'.

The base station shall include occurrences of the following three-field record as specified in 7.7.5.

RECORD_TYPE - Information record type.

The base station shall set this field as specified in 7.7.5.

RECORD_LEN - Information record length.

The base station shall set this field to the number of octets in the type-specific fields included in this record.

type-specific fields - Type-specific fields.

The base station shall include type-specific fields as specified in 7.7.5.

RESERVED - Reserved bits.

The base station shall set this field to '00'.

### 7.7.2.3.2.13 Extended System Parameters Message

When the base station sends an *Extended System Parameters Message*, it shall use the following variable-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00001101') | 8 |
| PILOT_PN | 9 |
| CONFIG_MSG_SEQ | 6 |
| DELETE_FOR_TMSI | 1 |
| USE_TMSI | 1 |
| PREF_MSID_TYPE | 2 |
| MCC | 10 |
| IMSI_11_12 | 7 |
| TMSI_ZONE_LEN | 4 |
| TMSI_ZONE | 8 × TMSI_ZONE_LEN |
| BCAST_INDEX | 3 |
| IMSI_T_SUPPORTED | 1 |
| P_REV | 8 |
| MIN_P_REV | 8 |
| SOFT_SLOPE | 6 |
| ADD_INTERCEPT | 6 |
| DROP_INTERCEPT | 6 |
| PACKET_ZONE_ID | 8 |
| MAX_NUM_ALT_SO | 3 |
| RESELECT_INCLUDED | 1 |
| EC_THRESH | 0 or 5 |
| EC_IO_THRESH | 0 or 5 |
| PILOT_REPORT | 1 |
| NGHBR_SET_ENTRY_INFO | 1 |
| ACC_ENT_HO_ORDER | 0 or 1 |
| NGHBR_SET_ACCESS_INFO | 1 |
| ACCESS_HO | 0 or 1 |
| ACCESS_HO_MSG_RSP | 0 or 1 |

(continues on next page)

| | |
|---|---|
| ACCESS_PROBE_HO | 0 or 1 |
| ACC_HO_LIST_UPD | 0 or 1 |
| ACC_PROBE_HO_OTHER_MSG | 0 or 1 |
| MAX_NUM_PROBE_HO | 0 or 3 |
| NGHBR_SET_SIZE | 0 or 6 |

If NGHBR_SET_ENTRY_INFO = 1, NGHBR_SET_SIZE occurrences of the following field; otherwise, no occurrence of the following field:

| | |
|---|---|
| ACCESS_ENTRY_HO | 1 |

If NGHBR_SET_ACCESS_INFO = 1, NGHBR_SET_SIZE occurrences of the following field; otherwise, no occurrence of the following field:

| | |
|---|---|
| ACCESS_HO_ALLOWED | 1 |

| | |
|---|---|
| RESERVED | 0-7 (as needed) |

MSG_TYPE - Message type.

The base station shall set this field to '00001101'.

PILOT_PN - Pilot PN sequence offset index.

The base station shall set this field to the pilot PN sequence offset for this base station, in units of 64 PN chips.

CONFIG_MSG_SEQ - Configuration message sequence number.

The base station shall set this field to CONFIG_SEQ (see 7.6.2.2).

DELETE_FOR_TMSI - Delete foreign TMSI.

The base station shall set this field to '1' to cause the mobile station to delete its TMSI if the TMSI was assigned in a different TMSI zone from that specified by the TMSI_ZONE field of this message; otherwise, the base station shall set this field to '0'.

USE_TMSI - Use TMSI indicator.

The base station shall set this field to the value shown in Table 7.7.2.3.2.13-1 corresponding to the type of MSID that the mobile station is to use on the Access Channel.

PREF_MSID_TYPE - Preferred Access Channel Mobile Station Identifier Type.

The base station shall set this field to the value shown in Table 7.7.2.3.2.13-1 corresponding to the type of MSID that the mobile station is to use on the Access Channel.

**Table 7.7.2.3.2.13-1. Preferred MSID Types**

| USE_TMSI (binary) | PREF_MSID_TYPE (binary) | Description |
|---|---|---|
| 0 | 00 | IMSI_S and ESN |
| 0 | 10 | IMSI |
| 0 | 11 | IMSI and ESN |
| 1 | 10 | TMSI (valid TMSI is assigned); IMSI (TMSI not assigned) |
| 1 | 11 | TMSI (valid TMSI is assigned); IMSI and ESN (TMSI not assigned) |
| All other values are reserved. | | |

MCC - Mobile Country Code.

The base station shall set this field to the MCC (see 6.3.1)

IMSI_11_12 - 11th and 12th digits of the IMSI.

The base station shall set this field to the IMSI_11_12 (see 6.3.1).

TMSI_ZONE_LEN - TMSI zone length.

The base station shall set this field to the number of octets included in the TMSI_ZONE. The base station shall set this field to a value in the range 1 to 8 inclusive.

TMSI_ZONE - TMSI zone.

The base station shall set this field to the TMSI zone number as specified in TIA/EIA/IS-735.

BCAST_INDEX - Broadcast slot cycle index.

To enable periodic broadcast paging, the base station shall set this field to an unsigned 3-bit number in the range 1-7, equal to the broadcast slot cycle index as defined in 6.6.2.1.1.3.3. To disable periodic broadcast paging, the base station shall set this field to '000'.

IMSI_T_SUPPORTED - IMSI_T support indicator.

The base station shall set this field to '1' to indicate support for a 15-digit IMSI_T addressing according to the CCITT recommendation E.212.

P_REV - Protocol revision level.

The base station shall set this field to '00000101'.

MIN_P_REV - Minimum protocol revision level.

The base station sets this field to prevent mobile stations which cannot be supported by the base station from accessing the system.

The base station shall set this field to the minimum protocol revision level that it supports. For Band Class 0 operation, the base station should set this field to a value of '00000010' or greater. For Band Class 1 operation, the base station should set this field to a value of '00000001' or greater.

SOFT_SLOPE - The slope in the inequality criterion for adding a pilot to the active set, or dropping a pilot from the active set (see 6.6.6.2.3 and 6.6.6.2.5.2).

The base station shall set this field as an unsigned binary number.

ADD_INTERCEPT - The intercept in the inequality criterion for adding a pilot to the active set (see 6.6.6.2.5.2).

The base station shall set this field as a signed binary number, in units of dB.

DROP_INTERCEPT - The intercept in the inequality criterion for dropping a pilot from the active set (see 6.6.6.2.3).

The base station shall set this field as a signed binary number, in units of dB.

PACKET_ZONE_ID - Packet data services zone identifier.

If the base station supports a packet data service zone, the base station shall set this field to its non-zero packet data services zone identifier.

If the base station does not support a packet data service zone, the base station shall set this field to '00000000'.

MAX_NUM_ALT_SO - Maximum number of alternative service options.

The base station shall set this field to the maximum number of alternative service option numbers that the mobile station is allowed to include in the *Origination Message* or the *Page Response Message*.

RESELECT_INCLUDED - System reselection parameters included.

If the base station is including system reselection parameters, the base station shall set this field to '1'; otherwise, the base station shall set this field to '0'.

EC_THRESH - Pilot power threshold.

If RESELECT_INCLUDED is set to '1', the base station shall include the field EC_THRESH and set this field to:

$$\lceil (pilot\_power\_threshold + 115) \rceil$$

where *pilot_power_threshold* is the pilot power, $E_c$, in dBm/1.23 MHz, below which the mobile station is to perform system reselection; otherwise, the base station shall omit this field.

EC_IO_THRESH - Pilot $E_c/I_0$ threshold.

If RESELECT_INCLUDED is set to '1', the base station shall include the field EC_IO_THRESH and set this field to:

$$\lfloor -20 \times \log_{10}(\mathit{pilot\_threshold}) \rfloor$$

where *pilot_threshold* is the pilot $E_c/I_0$ below which the mobile station is to perform system reselection; otherwise, the base station shall omit this field.

PILOT_REPORT - Pilot reporting indicator.

The base station shall set this field to '1' if the mobile station is to report the additional pilots which have pilot strengths exceeding T_ADD in all Access Channel messages. The base station shall set this field to '0' if the mobile station is to report the additional pilots which have pilot strengths exceeding T_ADD only in the *Origination Message* and the *Page Response Message*.

NGHBR_SET-_ENTRY_INFO - Neighbor Set access entry handoff information included indicator.

If the base station is including information on the Neighbor Set access entry handoff, the base station shall set this field to '1'; otherwise, the base station shall set this field to '0'.

ACC_ENT_HO_ORDER - Access entry handoff permitted indicator.

If NGHBR_SET_ENTRY_INFO is set to '1', the base station shall include this field and set it as described below; otherwise, the base station shall omit this field.

The base station shall set this field to '1' if the mobile station is permitted to perform an access entry handoff after receiving a message while performing the *Mobile Station Order and Message Processing Operation* in the *Mobile Station Idle State* (see 6.6.2.4); otherwise, the base station shall set this field to '0'.

NGHBR_SET-_ACCESS_INFO - Neighbor Set access handoff included indicator.

If the base station is including information on the Neighbor Set access handoff or access probe handoff, the base station shall set this field to '1', otherwise, the base station shall set this field to '0'.

ACCESS_HO - Access handoff permitted indicator.

If NGHBR_SET_ACCESS_INFO is set to '1', the base station shall include this field and set it as described below; otherwise, the base station shall omit this field.

The base station shall set this field to '1' if the mobile station is permitted to perform an access handoff (see 6.6.3.1.3.2); otherwise, the base station shall set this field to '0'.

ACCESS_HO_MSG_RSP - Access handoff permitted for message response indicator.

If ACCESS_HO is set to '1', the base station shall include this field and set it as described below; otherwise, the base station shall omit this field.

The base station shall set this field to '1' if the mobile station is permitted to perform an access handoff after receiving a message and before responding to that message in the *System Access State;* otherwise, the base station shall set this field to '0'.

ACCESS_PROBE_HO - Access probe handoff permitted indicator.

If NGHBR_SET_ACCESS_INFO is set to '1', the base station shall include this field and set it as described below; otherwise, the base station shall omit this field.

The base station shall set this field to '1' if the mobile station is permitted to perform an access probe handoff (see 6.6.3.1.3.3); otherwise, the base station shall set this field to '0'.

ACC_HO_LIST_UPD - Access handoff list update permitted indicator.

If ACCESS_PROBE_HO is included and is set to '1', the base station shall include this field and set it as described below; otherwise, the base station shall omit this field.

The base station shall set this field to '1' if the mobile station is permitted to update the access handoff list during an access attempt (see 6.6.3.1.7.2); otherwise, the base station shall set this field to '0'.

ACC_PROBE_HO-_OTHER_MSG - Access probe handoff permitted for messages other than the *Origination Message* and the *Page Response Message*.

If ACCESS_PROBE_HO is set to '1', the base station shall include this field and set it as described below; otherwise, the base station shall omit this field.

The base station shall set this field to '1' if the mobile station is permitted to perform an access probe handoff for messages other than the *Origination Message* and the *Page Response Message*. The base station shall set this field to '0' if the mobile station is permitted to perform an access probe handoff only for the *Origination Message* and the *Page Response Message*. See 6.6.3.1.3.3.

MAX_NUM_PROBE_HO - Maximum number of times that the mobile station is permitted to perform an access probe handoff.

If ACCESS_PROBE_HO is set to '1', the base station shall include this field and set it as described below; otherwise, the base station shall omit this field.

The base station shall set this field to the maximum number of times to be allowed for the mobile station to perform an access probe handoff within an access attempt minus one.

NGHBR_SET_SIZE - Size of the Neighbor Set.

If NGHBR_SET_ENTRY_INFO or NGHBR_SET_ACCESS_INFO is equal to '1', the base station shall set this field to the number of pilots included in the *Neighbor List Message*, *Extended Neighbor List Message*, or *General Neighbor List Message*; otherwise, the base station shall omit this field.

If NGHBR_SET_ENTRY_INFO is equal to '1', the base station shall include NGHBR_SET_SIZE occurrences of the following field:

ACCESS_ENTRY_HO - Idle handoff permitted when entering the System Access State.

The base station shall set this field to '1' if the mobile station is permitted to perform an idle handoff between the time it receives a message on the Paging Channel when in the *Mobile Station Idle State* and it enters the *System Access State* to respond to the message; otherwise, the base station shall set this field to '0'. The base station shall use the same order for the ACCESS_ENTRY_HO fields in this message as is used for pilots which are listed in the *Neighbor List Message*, *Extended Neighbor List Message*, or *General Neighbor List Message*. Specifically, the $i^{th}$ occurrence of the ACCESS_ENTRY_HO field shall correspond the $i^{th}$ pilot in the *Neighbor List Message*, *Extended Neighbor List Message*, or *General Neighbor List Message*.

If NGHBR_SET_ACCESS_INFO is equal to '1', the base station shall include NGHBR_SET_SIZE occurrences of the following one field:

ACCESS_HO_ALLOWED - Access handoff and access probe handoff permitted for the corresponding pilot while in the *System Access State*.

The base station shall set this field to '1' if the mobile station is permitted to perform an access handoff or access probe handoff to the corresponding pilot when the mobile station is in the *System Access State* (see 6.6.3.1.8 and 6.6.3.1.9); otherwise, the base station shall set this field to '0'. The base station shall use the same order for the ACCESS_HO_ALLOWED fields in this message as is used for pilots which are listed in the *Neighbor List Message*, *Extended Neighbor List Message*, or *General Neighbor List Message*. Specifically, the $i^{th}$ occurrence of the ACCESS_HO_ALLOWED field shall correspond the $i^{th}$ pilot in the *Neighbor List Message*, *Extended Neighbor List Message*, or *General Neighbor List Message*.

RESERVED - Reserved bits.

The base station shall add reserved bits as needed in order to make the length of the entire message equal to an integer number of octets. The base station shall set these bits to '0'.

7.7.2.3.2.14 Extended Neighbor List Message

When the base station sends an *Extended Neighbor List Message*, it shall use the following variable-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00001110') | 8 |
| PILOT_PN | 9 |
| CONFIG_MSG_SEQ | 6 |
| PILOT_INC | 4 |
| Zero or more occurrences of the following record: | |
| NGHBR_CONFIG | 3 |
| NGHBR_PN | 9 |
| SEARCH_PRIORITY | 2 |
| FREQ_INCL | 1 |
| NGHBR_BAND | 0 or 5 |
| NGHBR_FREQ | 0 or 11 |
| RESERVED | 0 - 7 (as needed) |

MSG_TYPE - Message type.

The base station shall set this field to '00001110'.

PILOT_PN - Pilot PN sequence offset index.

The base station shall set this field to the pilot PN sequence offset for this base station, in units of 64 PN chips.

CONFIG_MSG_SEQ - Configuration message sequence number.

The base station shall set this field to CONFIG_SEQ (see 7.6.2.2).

PILOT_INC - Pilot PN sequence offset index increment.

A mobile station searches for Remaining Set pilots at pilot PN sequence index values that are multiples of this value.

The base station shall set this field to the pilot PN sequence increment, in units of 64 PN chips, that mobile stations are to use for searching the Remaining Set. The base station should set this field to the largest increment such that the pilot PN sequence offsets of all its neighbor base stations are integer multiples of that increment.

The base station shall set this field to a value in the range 1 to 15 inclusive.

The base station shall include one occurrence of the following record for each pilot that a mobile station is to place in its Neighbor Set.

NGHBR_CONFIG - Neighbor configuration.

The base station shall set this field to the value shown in Table 7.7.2.3.2.14-1 corresponding to the configuration of this neighbor.

**Table 7.7.2.3.2.14-1. Neighbor Configuration Field**

| Value (binary) | Neighbor Configuration |
|---|---|
| 000 | The neighbor base station has the same number of frequencies having Paging Channels as the current base station and has a CDMA frequency assignment corresponding to this CDMA frequency assignment with the same number of Paging Channels. If FREQ_INCL equals '0' for this record, this corresponding CDMA frequency assignment is the current CDMA frequency assignment. If FREQ_INCL equals '1' for this record, this corresponding CDMA frequency assignment is given by NGHBR_BAND and NGHBR_FREQ. |
| 001 | The neighbor base station has the same number of frequencies having Paging Channels as the current base station and has a CDMA frequency assignment corresponding to this CDMA frequency assignment with a different number of Paging Channels. This corresponding frequency assignment does have a Primary Paging Channel. If FREQ_INCL equals '0' for this record, this corresponding CDMA frequency assignment is the current CDMA frequency assignment. If FREQ_INCL equals '1' for this record, this corresponding CDMA frequency assignment is given by NGHBR_BAND and NGHBR_FREQ. |
| 010 | The neighbor base station may have a different number of frequencies having Paging Channels as the current base station. If FREQ_INCL equals '0' for this record, the neighbor base station has a Primary Paging Channel on the first CDMA Channel listed in the *CDMA Channel List Message* transmitted by the current base station. If FREQ_INCL equals '1' for this record, the neighbor base station has a Primary Paging Channel on the CDMA frequency assignment given by NGHBR_BAND and NGHBR_FREQ. |
| 011 | The neighbor base station configuration is unknown. If FREQ_INCL equals '0' for this record, this CDMA frequency assignment has a Pilot Channel. If FREQ_INCL equals '1' for this record, the CDMA frequency assignment given by NGHBR_BAND and NGHBR_FREQ has a Pilot Channel. |
| 100-111 | Reserved. |

NGHBR_PN - Neighbor pilot PN sequence offset index.

The base station shall set this field to the pilot PN sequence offset for this neighbor, in units of 64 PN chips.

SEARCH_PRIORITY - Pilot Channel search priority.

The base station shall set this field to the search priority for the Pilot Channel corresponding to NGHBR_PN. The base station shall set the search priority as shown in Table 7.7.2.3.2.14-2.

**Table 7.7.2.3.2.14-2. Search Priority Field**

| Value (binary) | Search Priority |
|---|---|
| 00 | Low |
| 01 | Medium |
| 10 | High |
| 11 | Very high |

FREQ_INCL - Frequency included indicator.

If the NGHBR_BAND and NGHBR_FREQ fields are included for this neighbor base station, the base station shall set this bit to '1'. If the NGHBR_BAND and NGHBR_FREQ fields are not included in this assignment record, the base station shall set this bit to '0'.

NGHBR_BAND - Neighbor band class.

If the FREQ_INCL bit is set to '1', the base station shall set this field to the CDMA band class, as specified in TSB58-A, corresponding to the CDMA frequency assignment for the CDMA Channel containing the Paging Channel the mobile station is to search. If the FREQ_INCL bit is set to '0', the base station shall omit this field.

NGHBR_FREQ - Neighbor frequency assignment.

If the FREQ_INCL bit is set to '1', the base station shall set this field to the CDMA Channel number, in the specified CDMA band class, corresponding to the CDMA frequency assignment for the CDMA Channel containing the Paging Channel the mobile station is to search. If the FREQ_INCL bit is set to '0', the base station shall omit this field.

RESERVED - Reserved bits.

The base station shall add reserved bits as needed in order to make the length of the entire message equal to an integer number of octets. The base station shall set these bits to '0'.

7.7.2.3.2.15 Status Request Message

When the base station sends a *Status Request Message*, it shall use the following variable-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00001111') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| VALID_ACK | 1 |
| ADDR_TYPE | 3 |
| ADDR_LEN | 4 |
| ADDRESS | 8 × ADDR_LEN |
| RESERVED | 4 |
| QUAL_INFO_TYPE | 8 |
| QUAL_INFO_LEN | 3 |
| Type-specific fields | 8 × QUAL_INFO_LEN |
| NUM_FIELDS | 4 |
| NUM_FIELDS occurrences of the following field: | |
| RECORD_TYPE | 8 |

MSG_TYPE - Message type.

The base station shall set this field to '00001111'.

ACK_SEQ - Acknowledgment sequence number.

If VALID_ACK is set to '1' in this message, the base station shall set this field to the MSG_SEQ field from the most recently received Access Channel message requiring an acknowledgment from the mobile station addressed by this message (see 7.6.3.1.1); otherwise, the base station may set this field to any value.

MSG_SEQ - Message sequence number.

The base station shall set this field to the acknowledgment sequence number for this message (see 7.6.2.1.4).

ACK_REQ - Acknowledgment required indicator.

If the mobile station is to acknowledge this message, the base station shall set this field to '1'. If the mobile station is not to acknowledge this message, the base station shall set this field to '0' (see 7.6.3.1.1).

VALID_ACK - Valid acknowledgment indicator.

To acknowledge the most recently received Access Channel message from the mobile station, the base station shall set this field to '1'. If this message does not acknowledge the most recently received Access Channel message from the mobile station, the base station shall set this field to '0'.

ADDR_TYPE - Address type.

See 7.7.2.3.1.

ADDR_LEN - Address field length.

See 7.7.2.3.1.

ADDRESS - Mobile station address.

See 7.7.2.3.1.

RESERVED - Reserved bits.

The mobile station shall set this field to '0000'.

QUAL_INFO_TYPE - Qualification information type.

The base station shall set this field to the value shown in Table 7.7.2.3.2.15-1 to show the inclusion of qualification information in the type-specific fields. The base station shall include the required qualification information in this message.

**Table 7.7.2.3.2.15-1. Qualification Information Type**

| Value (binary) | Included Information |
|---|---|
| 00000000 | None |
| 00000001 | BAND_CLASS |
| 00000010 | BAND_CLASS and OP_MODE |
| All other values are reserved. | |

**Table 7.7.2.3.2.15-2. Status Information Record Types**

| Information Record Requested | Record Type (see Table 6.7.4-1) (binary) | QUAL_INFO_TYPE (binary) |
|---|---|---|
| Reserved for obsolete Identification | 00000110 | - |
| Call Mode | 00000111 | 00000000 |
| Terminal Information | 00001000 | 00000010 |
| Roaming Information | 00001001 | 00000010 |
| Security Status | 00001010 | 00000000 |
| IMSI | 00001100 | 00000000 |
| ESN | 00001101 | 00000000 |
| Band Class Information | 00001110 | 00000000 |
| Power Class Information | 00001111 | 00000010 |
| Operating Mode Information | 00010000 | 00000001 |
| Service Option Information | 00010001 | 00000010 |
| Multiplex Option Information | 00010010 | 00000010 |
| Service Configuration | 00010011 | 00000000 |
| Power Control Information | 00010111 | 00000000 |
| IMSI_M | 00011000 | 00000000 |
| IMSI_T | 00011001 | 00000000 |
| Capability Information | 00011010 | 00000000 |
| All other record type values are reserved. | | |

QUAL_INFO_LEN - Qualification information length.

The base station shall set this field to the number of octets included in the type-specific fields of the qualification information.

Type-specific fields - Type-specific fields.

The base station shall set these fields to the qualification information according to the QUAL_INFO_TYPE field.

If QUAL_INFO_TYPE is equal to '00000000', the type-specific fields are omitted.

If QUAL_INFO_TYPE is equal to '00000001', the base station shall use the following fixed-length format for the type-specific fields:

| Type-specific Field | Length (bits) |
|---|---|
| BAND_CLASS | 5 |
| RESERVED | 3 |

If QUAL_INFO_TYPE is equal to '00000010', the base station shall use the following fixed-length format for the type-specific fields:

| Type-specific Field | Length (bits) |
|---|---|
| BAND_CLASS | 5 |
| OP_MODE | 8 |
| RESERVED | 3 |

BAND_CLASS - Band class.

The base station shall set this field as defined in TSB58-A to specify the band class qualification information.

OP_MODE - Operating mode.

The base station shall set this field as shown in Table 7.7.2.3.2.15-3 to specify the operating mode qualification information if MOB_P_REV of the current band class is less than or equal to three. The base station shall set this field as shown in Table 7.7.2.3.2.15-4 to specify the operating mode qualification information if MOB_P_REV of the current band class is greater than three.

**Table 7.7.2.3.2.15-3. Operating Mode for MOB_P_REV Less Than or Equal to Three**

| Description | Value (binary) |
|---|---|
| TIA/EIA-95 CDMA mode in Band Class 1 | 00000000 |
| TIA/EIA-95 CDMA mode in Band Class 0 | 00000001 |
| TIA/EIA-95 analog mode | 00000010 |
| TIA/EIA/IS-91 wide analog mode | 00000011 |
| TIA/EIA/IS-91 narrow analog mode | 00000100 |
| All other values are reserved. | |

**Table 7.7.2.3.2.15-4. Operating Mode for MOB_P_REV Greater Than Three**

| Description | Standards for Band Class 0 and Band Class 1 | Value (binary) |
|---|---|---|
| CDMA mode | TIA/EIA-95 | 00000000 or 00000001 |
| Analog mode | TIA/EIA-95 | 00000010 |
| Wide analog mode | TIA/EIA/IS-91 | 00000011 |
| Narrow analog mode | TIA/EIA/IS-91 | 00000100 |
| All other values are reserved. | | |

NUM_FIELDS - Number of requested fields in this message.

The base station shall set this field to the number of occurrences of RECORD_TYPE in this message.

The base station shall only request the status information records qualified by the included qualification information in this message. The base station shall include one occurrence of the following field for each information record that is requested:

RECORD_TYPE - Information record type.

The base station shall set this field to the record type value shown in Table 7.7.2.3.2.15-2 corresponding to the information record requested.

7.7.2.3.2.16 Service Redirection Message

When the base station sends a *Service Redirection Message*, it shall use the following variable-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00010000') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| VALID_ACK | 1 |
| ADDR_TYPE | 3 |
| ADDR_LEN | 4 |
| ADDRESS | 8 × ADDR_LEN |
| RETURN_IF_FAIL | 1 |
| DELETE_TMSI | 1 |
| REDIRECT_TYPE | 1 |
| One occurrence of the following record: | |
| RECORD_TYPE | 8 |
| RECORD_LEN | 8 |
| Type-specific fields | 8 × RECORD_LEN |

MSG_TYPE - Message type.

The base station shall set this field to '00010000'.

ACK_SEQ - Acknowledgment sequence number.

If VALID_ACK is set to '1' in this message, the base station shall set this field to the MSG_SEQ field from the most recently received Access Channel message requiring an acknowledgment from the mobile station addressed by this message (see 7.6.3.1.1); otherwise, the base station may set this field to any value.

MSG_SEQ - Message sequence number.

The base station shall set this field to the acknowledgment sequence number for this message (see 7.6.2.1.4).

ACK_REQ - Acknowledgment required indicator.

If the mobile station is to acknowledge this message, the base station shall set this field to '1'. If the mobile station is not to acknowledge this message, the base station shall set this field to '0' (see 7.6.3.1.1).

VALID_ACK - Valid acknowledgment indicator.

To acknowledge the most recently received Access Channel message from the mobile station, the base station shall set this field to '1'. If this message does not acknowledge the most recently received Access Channel message from the mobile station, the base station shall set this field to '0'.

ADDR_TYPE - Address type.

See 7.7.2.3.1.

ADDR_LEN - Address field length.

See 7.7.2.3.1.

ADDRESS - Mobile station address.

See 7.7.2.3.1.

RETURN_IF_FAIL - Return if fail indicator.

The base station shall set this field to '1' if the mobile station is required to return to the system from which it is being redirected upon failure to obtain service using the redirection criteria specified in this message; otherwise, the base station shall set this field to '0'.

DELETE_TMSI - Delete TMSI indicator.

The base station shall set this field to '1' if the mobile station is required to delete the TMSI assigned to the mobile station; otherwise, the base station shall set this field to '0'.

REDIRECT_TYPE - Redirect indicator.

The base station shall set this field to the REDIRECT_TYPE value shown in table 7.7.2.3.2.16-2 corresponding to the redirection type.

**Table 7.7.2.3.2.16-1. Redirection Types**

| Description | REDIRECT_TYPE (binary) |
|---|---|
| Normal redirection | 0 |
| NDSS redirection | 1 |

The base station shall include one occurrence of the following record:

RECORD_TYPE - Redirection record type.

The base station shall set this field to the RECORD_TYPE value shown in Table 7.7.2.3.2.16-2 corresponding to the type of redirection specified by this record.

**Table 7.7.2.3.2.16-2. Redirection Record Types**

| Description | RECORD_TYPE (binary) |
|---|---|
| NDSS off indication | 00000000 |
| Redirection to an analog system as defined in EIA/TIA-553, EIA/TIA/IS-54, TIA/EIA/IS-91, TIA/EIA/IS-136, and TIA/EIA-95. | 00000001 |
| Redirection to a CDMA system as defined in TIA/EIA-95. | 00000010 |
| Redirection to a TACS analog system as defined in Department of Trade and Industry's TACS Mobile Station-Land Station Compatibility Specification, Issue 4, Amendment 1. | 00000011 |
| Redirection to a JTACS analog system as defined in ARIB's RCR STD-36. | 00000100 |
| All other RECORD_TYPE values are reserved | |

RECORD_LEN - Redirection record length.

If RECORD_TYPE equals to '00000000', the base station shall set this field to '00000000'; otherwise, the base station shall set this field to the number of octets in the type-specific fields of this redirection record.

Type-specific fields - Redirection record type-specific fields.

The base station shall include type-specific fields based on the RECORD_TYPE of this redirection record.

If RECORD_TYPE is equal to '00000000', the base station shall not include the type-specific fields.

If RECORD_TYPE is equal to '00000001', the base station shall include the following fields:

| Field | Length (bits) |
|---|---|
| EXPECTED_SID | 15 |
| IGNORE_CDMA | 1 |
| SYS_ORDERING | 3 |
| RESERVED | 5 |

EXPECTED_SID - Expected SID.

If the base station is redirecting the mobile station to a specific system, the base station shall set this field to the SID of that system; otherwise, the base station shall set this field to 0.

IGNORE_CDMA - Ignore CDMA Available indicator.

The base station shall set this field to '1' to indicate that the mobile station is to ignore the *CDMA Capability Message* on the analog system to which it is being redirected. The base station shall set this field to '0' to indicate that the mobile station may discontinue service on the system to which it is being redirected if the mobile station receives a *CDMA Capability Message* with CDMA_AVAIL equal to '1', and the preferred mode of the mobile station is CDMA.

SYS_ORDERING - System ordering.

The base station shall set this field to the SYS_ORDERING value shown in Table 7.7.2.3.2.16-3 corresponding to the order in which the mobile station is to attempt to obtain service on an analog system.

**Table 7.7.2.3.2.16-3. SYS_ORDERING**

| Description | SYS_ORDERING (binary) |
|---|---|
| Attempt to obtain service on either System A or B in accordance with the custom system selection process (see 6.6.1.1.1). | 000 |
| Attempt to obtain service on System A only. | 001 |
| Attempt to obtain service on System B only. | 010 |
| Attempt to obtain service on System A first. If unsuccessful, attempt to obtain service on System B. | 011 |
| Attempt to obtain service on System B first. If unsuccessful, attempt to obtain service on System A. | 100 |
| Attempt to obtain service on either System A or System B. If unsuccessful, attempt to obtain service on the alternate system (System A or System B). | 101 |
| All other SYS_ORDERING values are reserved | |

RESERVED - Reserved bits.

The base station shall set this field to '00000'.

If RECORD_TYPE is equal to '00000010', the base station shall include the following fields:

| Subfield | Length (bits) |
|---|---|
| BAND_CLASS | 5 |
| EXPECTED_SID | 15 |
| EXPECTED_NID | 16 |
| RESERVED | 4 |
| NUM_CHANS | 4 |
| NUM_CHANS occurrences of the following field: | |
| CDMA_CHAN | 11 |
| | |
| RESERVED | 0-7 (as needed) |

BAND_CLASS - Band class.

The base station shall set this field to the CDMA band class, as specified in TSB58-A.

EXPECTED_SID - Expected SID.

If the base station is redirecting the mobile station to a specific system, the base station shall set this field to the SID of that system; otherwise, the base station shall set this field to 0.

EXPECTED_NID - Expected NID.

If the base station is redirecting the mobile station to a specific network, the base station shall set this field to the NID of that network; otherwise, the base station shall set this field to 65535.

RESERVED - Reserved bits.

The base station shall set this field to '0000'.

NUM_CHANS - Number of CDMA Channels.

The base station shall set this field to the number of occurrences of the CDMA_CHAN field in this record.

CDMA_CHAN - CDMA Channel number.

For each CDMA Channel on which the mobile station is to attempt to acquire a CDMA system, the base station shall include one occurrence of this field specifying the associated CDMA Channel number.

RESERVED - Reserved bits.

The base station shall add reserved bits as needed in order to make the length of the record equal to an integer number of octets. The base station shall set these bits to '0'.

### 7.7.2.3.2.17 General Page Message

When the base station sends a *General Page Message*, it shall use the following variable-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00010001') | 8 |
| CONFIG_MSG_SEQ | 6 |
| ACC_MSG_SEQ | 6 |
| CLASS_0_DONE | 1 |
| CLASS_1_DONE | 1 |
| TMSI_DONE | 1 |
| ORDERED_TMSIS | 1 |
| BROADCAST_DONE | 1 |
| RESERVED | 4 |
| ADD_LENGTH | 3 |
| ADD_PFIELD | 8 × ADD_LENGTH |
| Zero or more occurrences of the following page record: | |
| PAGE_CLASS | 2 |
| PAGE_SUBCLASS | 2 |
| Page type-specific fields | 38-184 |
| RESERVED | 0 - 7 (as needed) |

MSG_TYPE - Message type.

The base station shall set this field to '00010001'.

CONFIG_MSG_SEQ - Configuration message sequence number.

The base station shall set this field to CONFIG_SEQ (see 7.6.2.2).

ACC_MSG_SEQ - Access parameters message sequence number.

The base station shall set this field to ACC_CONFIG_SEQ (see 7.6.2.2).

CLASS_0_DONE - Class 0 pages are done.

If all messages and records directed to mobile stations operating in the slotted mode, active in this slot, and having an assigned class 0 IMSI have been sent by the end of this *General Page Message*, the base station shall set this field to '1'; otherwise, the base station shall set this field to '0'.

CLASS_1_DONE - Class 1 pages are done.

If all messages and records directed to mobile stations operating in the slotted mode, active in this slot, and having an assigned class 1 IMSI have been sent by the end of this *General Page Message*, the base station shall set this field to '1'; otherwise, the base station shall set this field to '0'.

TMSI_DONE - TMSI pages are done.

If all the page records having PAGE_CLASS equal to '10' or other directed messages for mobile stations operating in the slotted mode, active in this slot, and having an assigned TMSI have been sent by the end of this *General Page Message*, the base station shall set this field to '1'; otherwise, the base station shall set this field to '0'.

ORDERED_TMSIS - TMSIs sent in numerical order.

If all the page records of PAGE_CLASS equal to '10' are sent such that the TMSI code values of the TMSI_CODE_ADDR fields for the mobile stations operating in the slotted mode are in ascending numerical order in all the *General Page Messages* sent within this slot, the base station shall set this field to '1'; otherwise, the base station shall set this field to '0'.

BROADCAST_DONE - Broadcast pages are done.

If all broadcast page records (PAGE_CLASS equal to '11') have been sent by the end of this *General Page Message*, the base station shall set this field to '1'; otherwise, the base station shall set this field to '0'.

RESERVED - Reserved bits.

The base station shall set this field to '0000'.

ADD_LENGTH - Number of octets in the page message specific fields.

If there are no additional page message specific fields, the base station shall set this field to '000'.

ADD_PFIELD - Additional page message specific fields.

The base station shall not include any additional page message specific fields, if ADD_LENGTH is '000'.

PAGE_CLASS - Class of the page record included in the message.

The base station shall include one occurrence of the appropriate page record for each mobile station which is paged in this message (see Table 7.7.2.3.2.17-1). The base station shall use the procedures in 7.6.2.1.5.1 to select the class of page record.

Page records with the PAGE_CLASS set equal to '00' are used to page mobile stations that have registered with a class 0 IMSI (see 7.6.2.1.5.1). Page records with the PAGE_CLASS set equal to '01' are used to page mobile stations that have registered with a class 1 IMSI. Page records with the PAGE_CLASS set equal to '10' are used to page mobile stations using the TMSI. Page records with the PAGE_CLASS set equal to '11' and PAGE_SUBCLASS set equal to '00' are used to announce broadcast messages sent on the Paging Channel (see 7.6.2.4.1.1).

PAGE_SUBCLASS - Subclass of the page record included in the message.

The base station shall set this field in association with the PAGE_CLASS field as specified in Table 7.7.2.3.2.17-1 to identify the type of the paging record included in the message.

Page type-specific fields - Fields of the page record.

The base station shall set all page type-specific fields according to the Page Record Format Number defined in Table 7.7.2.3.2.17-1.

**Table 7.7.2.3.2.17-1. Page Record Formats**

| Description | PAGE_CLASS (binary) | PAGE_SUBCLASS (binary) | Page Record Format Number |
|---|---|---|---|
| Class 0, IMSI_S included | 00 | 00 | 0 |
| Class 0, IMSI_S and IMSI_11_12 included | 00 | 01 | 1 |
| Class 0, IMSI_S and MCC included | 00 | 10 | 2 |
| Class 0, IMSI_S, IMSI_11_12, and MCC included | 00 | 11 | 3 |
| Class 1, IMSI_S and IMSI_11_12 included | 01 | 00 | 4 |
| Class 1, IMSI_S, IMSI_11_12, and MCC included | 01 | 01 | 5 |
| Class 2 with 32-bit TMSI_CODE_ADDR (TMSI_ZONE not included) | 10 | 00 | 8 |
| Class 2 with 24-bit TMSI_CODE_ADDR (TMSI_ZONE not included) | 10 | 01 | 9 |
| Class 2 with 16-bit TMSI_CODE_ADDR (TMSI_ZONE not included) | 10 | 10 | 10 |
| Class 2 with 32-bit TMSI_CODE_ADDR (TMSI_ZONE included) | 10 | 11 | 11 |
| Class 3, Broadcast | 11 | 00 | 12 |

If PAGE_CLASS = '00' and PAGE_SUBCLASS = '00' (page record format is equal to 0), then the base station shall use the following page type-specific fields:

| Field | Length (bits) |
|---|---|
| MSG_SEQ | 3 |
| IMSI_S | 34 |
| SPECIAL_SERVICE | 1 |
| SERVICE_OPTION | 0 or 16 |

If PAGE_CLASS = '00' and PAGE_SUBCLASS = '01' (page record format is equal to 1), then the base station shall use the following page type-specific fields:

| Field | Length (bits) |
|---|---|
| MSG_SEQ | 3 |
| IMSI_11_12 | 7 |
| IMSI_S | 34 |
| SPECIAL_SERVICE | 1 |
| SERVICE_OPTION | 0 or 16 |

If PAGE_CLASS = '00' and PAGE_SUBCLASS = '10' (page record format is equal to 2), then the base station shall use the following page type-specific fields:

| Field | Length (bits) |
|---|---|
| MSG_SEQ | 3 |
| MCC | 10 |
| IMSI_S | 34 |
| SPECIAL_SERVICE | 1 |
| SERVICE_OPTION | 0 or 16 |

If PAGE_CLASS = '00' and PAGE_SUBCLASS = '11' (page record format is equal to 3), then the base station shall use the following page type-specific fields:

| Field | Length (bits) |
|---|---|
| MSG_SEQ | 3 |
| MCC | 10 |
| IMSI_11_12 | 7 |
| IMSI_S | 34 |
| SPECIAL_SERVICE | 1 |
| SERVICE_OPTION | 0 or 16 |

If PAGE_CLASS = '01' and PAGE_SUBCLASS = '00' (page record format is equal to 4), then the base station shall use the following page type-specific fields:

| Field | Length (bits) |
|---|---|
| MSG_SEQ | 3 |
| IMSI_ADDR_NUM | 3 |
| IMSI_11_12 | 7 |
| IMSI_S | 34 |
| SPECIAL_SERVICE | 1 |
| SERVICE_OPTION | 0 or 16 |

If PAGE_CLASS = '01' and PAGE_SUBCLASS = '01' (page record format is equal to 5), then the base station shall use the following page type-specific fields:

| Field | Length (bits) |
|---|---|
| MSG_SEQ | 3 |
| IMSI_ADDR_NUM | 3 |
| MCC | 10 |
| IMSI_11_12 | 7 |
| IMSI_S | 34 |
| SPECIAL_SERVICE | 1 |
| SERVICE_OPTION | 0 or 16 |

If PAGE_CLASS = '10' and PAGE_SUBCLASS = '00' (page record format is equal to 8), then the base station shall use the following page type-specific fields:

| Field | Length (bits) |
|---|---|
| MSG_SEQ | 3 |
| TMSI_CODE_ADDR | 32 |
| SPECIAL_SERVICE | 1 |
| SERVICE_OPTION | 0 or 16 |

If PAGE_CLASS = '10' and PAGE_SUBCLASS = '01' (page record format is equal to 9), then the base station shall use the following page type-specific fields:

| Field | Length (bits) |
|---|---|
| MSG_SEQ | 3 |
| TMSI_CODE_ADDR | 24 |
| SPECIAL_SERVICE | 1 |
| SERVICE_OPTION | 0 or 16 |

The base station shall only use the page record format equal to 9 if the most significant octet of the TMSI code assigned to the specified mobile station is '00000000'.

If PAGE_CLASS = '10' and PAGE_SUBCLASS = '10' (page record format is equal to 10), then the base station shall use the following page type-specific fields:

| Field | Length (bits) |
|---|---|
| MSG_SEQ | 3 |
| TMSI_CODE_ADDR | 16 |
| SPECIAL_SERVICE | 1 |
| SERVICE_OPTION | 0 or 16 |

The base station shall only use the page record format equal to 10 if the two most significant octets of the TMSI code assigned to the specified mobile station are '00000000'.

If PAGE_CLASS = '10' and PAGE_SUBCLASS = '11' (page record format is equal to 11), then the base station shall use the following page type-specific fields:

| Field | Length (bits) |
|---|---|
| MSG_SEQ | 3 |
| TMSI_ZONE_LEN | 4 |
| TMSI_ZONE | 8 × TMSI_ZONE_LEN |
| TMSI_CODE_ADDR | 32 |
| SPECIAL_SERVICE | 1 |
| SERVICE_OPTION | 0 or 16 |

If PAGE_CLASS = '11' and PAGE_SUBCLASS = '00' (page record format is equal to 12), then the base station shall use the following page type-specific fields:

| Field | Length (bits) |
|---|---|
| BURST_TYPE | 6 |
| ADDR_LEN | 4 |
| BC_ADDR | 8 × ADDR_LEN |

MSG_SEQ - Message sequence number.

If this field is included in the page type-specific fields, the base station shall set this field to the message sequence number for this message (see 7.6.2.1.4).

IMSI_S - Last ten digits of the IMSI.

If this field is included in the page type-specific fields, the base station shall set this field to IMSI_S. See 6.3.1.

SPECIAL_SERVICE - Special service option indicator.

If this field is included in the page type-specific field, the base station shall set this field to '1' to request a special service option.

SERVICE_OPTION - Service option.

If the SPECIAL_SERVICE field is included in the page type-specific fields, and is set to '1', the base station shall set this field to the service option code shown in TSB58-A, corresponding to the requested service option. If the SPECIAL_SERVICE field is not included in the page type-specific fields, or is included and is set to '0', the base station shall omit this field.

IMSI_11_12 - The 11th and 12th digits of IMSI.

If this field is included in the page type-specific fields, the base station shall set this field to IMSI_11_12. See 6.3.1.

MCC - Mobile Country Code

If this field is included in the page type-specific fields, the base station shall set this field to the MCC (see 6.3.1).

IMSI_ADDR_NUM - Number of IMSI address digits.

If this field is included in the page type-specific fields, the base station shall set this field according to the number of digits in the NMSI minus four.

TMSI_CODE_ADDR - Temporary mobile station identity code address.

If this field is included in the page type-specific fields, the base station shall set this field to the TMSI code assigned to the addressed mobile station of the length corresponding to the page record format (see Table 7.7.2.3.2.17-1).

TMSI_ZONE_LEN - TMSI zone length.

If this field is included in the page type-specific fields, the base station shall set this field to the number of octets included in the TMSI_ZONE. The base station shall set this field to a value in the range 1 to 8 inclusive.

TMSI_ZONE - TMSI zone.

If this field is included in the page type-specific fields, the base station shall set this field to the TMSI zone number associated with the assigned TMSI.

BURST_TYPE - Data burst type.

If this field is included in the page type-specific fields, the base station shall set this field to the value shown in TSB58-A, for the type of the broadcast *Data Burst Message* being announced.

ADDR_LEN - Address field length.

If this field is included in the page type-specific fields, the base station shall set this field to the number of octets in the BC_ADDR field.

BC_ADDR - Broadcast address.

If this field is included in the page type-specific fields, the base station shall set this field according to the requirements applicable to the burst type of the *Data Burst Message* being announced.

RESERVED - Reserved bits.

The base station shall add reserved bits as needed in order to make the length of the entire message equal to an integer number of octets. The base station shall set these bits to '0'.

### 7.7.2.3.2.18 Global Service Redirection Message

When the base station sends a *Global Service Redirection Message*, it shall use the following variable-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00010010') | 8 |
| PILOT_PN | 9 |
| CONFIG_MSG_SEQ | 6 |
| REDIRECT_ACCOLC | 16 |
| RETURN_IF_FAIL | 1 |
| DELETE_TMSI | 1 |
| RESERVED | 1 |
| One occurrence of the following record: | |
| RECORD_TYPE | 8 |
| RECORD_LEN | 8 |
| Type-specific fields | 8 × RECORD_LEN |

MSG_TYPE - Message type.

The base station shall set this field to '00010010'.

PILOT_PN - Pilot PN sequence offset index.

The base station shall set this field to the pilot PN sequence offset for this base station, in units of 64 PN chips.

CONFIG_MSG_SEQ - Configuration message sequence number.

The base station shall set this field to CONFIG_SEQ (see 7.6.2.2).

REDIRECT_ACCOLC - Redirected access overload classes.

This field consists of the following subfields:

| Subfield | Length (bits) | Subfield Description |
|---|---|---|
| ACCOLC_0 | 1 | Access overload class 0 |
| ACCOLC_1 | 1 | Access overload class 1 |
| ACCOLC_2 | 1 | Access overload class 2 |
| ACCOLC_3 | 1 | Access overload class 3 |
| ACCOLC_4 | 1 | Access overload class 4 |
| ACCOLC_5 | 1 | Access overload class 5 |
| ACCOLC_6 | 1 | Access overload class 6 |
| ACCOLC_7 | 1 | Access overload class 7 |
| ACCOLC_8 | 1 | Access overload class 8 |
| ACCOLC_9 | 1 | Access overload class 9 |
| ACCOLC_10 | 1 | Access overload class 10 |
| ACCOLC_11 | 1 | Access overload class 11 |
| ACCOLC_12 | 1 | Access overload class 12 |
| ACCOLC_13 | 1 | Access overload class 13 |
| ACCOLC_14 | 1 | Access overload class 14 |
| ACCOLC_15 | 1 | Access overload class 15 |

The base station shall set the subfields corresponding to the access overload classes of mobile stations which are to be redirected to '1', and shall set the remaining subfields to '0'.

RETURN_IF_FAIL - Return if fail indicator.

The base station shall set this field to '1' if the mobile station is required to return to the system from which it is being redirected upon failure to obtain service using the redirection criteria specified in this message; otherwise, the base station shall set this field to '0'.

DELETE_TMSI - Delete TMSI indicator.

The base station shall set this field to '1' if the mobile station is required to delete the TMSI assigned to the mobile station; otherwise, the base station shall set this field to '0'.

RESERVED - Reserved bit.

The base station shall set this field to '0'.

The base station shall include one occurrence of the following three-field record:

RECORD_TYPE - Redirection record type.

The base station shall set this field to the RECORD_TYPE value shown in Table 7.7.2.3.2.16-2 corresponding to the type of redirection specified by this record.

RECORD_LEN - Redirection record length.

The base station shall set this field to the number of octets in the type-specific fields of this redirection record.

Type-specific fields - Redirection record type-specific fields.

The base station shall include type-specific fields based on the RECORD_TYPE of this redirection record.

If RECORD_TYPE is equal to '00000001', the base station shall include the following fields:

| Field | Length (bits) |
|---|---|
| EXPECTED_SID | 15 |
| IGNORE_CDMA | 1 |
| SYS_ORDERING | 3 |
| MAX_REDIRECT_DELAY | 5 |

EXPECTED_SID - Expected SID.

If the base station is redirecting the mobile station to a specific system, the base station shall set this field to the SID of that system; otherwise, the base station shall set this field to 0.

IGNORE_CDMA - Ignore CDMA Available indicator.

The base station shall set this field to '1' to indicate that the mobile station is to ignore the *CDMA Capability Message* on the analog system to which it is being redirected. The base station shall set this field to '0' to indicate that the mobile station may discontinue service on the system to which it is being redirected if the mobile station receives a *CDMA Capability Message* with CDMA_AVAIL equal to '1', and the preferred mode of the mobile station is CDMA.

SYS_ORDERING - System ordering.

The base station shall set this field to the SYS_ORDERING value shown in Table 7.7.2.3.2.16-3 corresponding to the order in which the mobile station is to attempt to obtain service on an analog system.

MAX_REDIRECT_DELAY - Maximum delay upon redirection.

The base station shall set this field to the maximum delay time, in units of 8 second increments, to be used by mobile stations in the event of a global redirection to analog mode. This operation can be invoked to avoid overloading an underlying analog cell's reverse control channel.

If RECORD_TYPE is equal to '00000010', the base station shall include the following fields:

| Subfield | Length (bits) |
|---|---|
| BAND_CLASS | 5 |
| EXPECTED_SID | 15 |
| EXPECTED_NID | 16 |
| RESERVED | 4 |
| NUM_CHANS | 4 |
| NUM_CHANS occurrences of the following field: | |
| CDMA_CHAN | 11 |
| | |
| RESERVED | 0-7 (as needed) |

BAND_CLASS - Band class.

The base station shall set this field to the CDMA band class, as specified in TSB58-A.

EXPECTED_SID - Expected SID.

If the base station is redirecting the mobile station to a specific system, the base station shall set this field to the SID of that system; otherwise, the base station shall set this field to 0.

EXPECTED_NID - Expected NID.

If the base station is redirecting the mobile station to a specific network, the base station shall set this field to the NID of that network; otherwise, the base station shall set this field to 65535.

RESERVED - Reserved bits.

The base station shall set this field to '0000'.

NUM_CHANS - Number of CDMA Channels.

The base station shall set this field to the number of occurrences of the CDMA_CHAN field in this record.

CDMA_CHAN - CDMA Channel number.

For each CDMA Channel on which the mobile station is to attempt to acquire a CDMA system, the base station shall include one occurrence of this field specifying the associated CDMA Channel number.

RESERVED - Reserved bits.

The base station shall add reserved bits as needed in order to make the length of the record equal to an integer number of octets. The base station shall set these bits to '0'.

7.7.2.3.2.19 TMSI Assignment Message

When the base station sends a *TMSI Assignment Message*, it shall use the following variable-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00010011') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| VALID_ACK | 1 |
| ADDR_TYPE | 3 |
| ADDR_LEN | 4 |
| ADDRESS | 8 × ADDR_LEN |
| RESERVED | 5 |
| TMSI_ZONE_LEN | 4 |
| TMSI_ZONE | 8 × TMSI_ZONE_LEN |
| TMSI_CODE | 32 |
| TMSI_EXP_TIME | 24 |
| RESERVED | 2 |

MSG_TYPE - Message type.

The base station shall set this field to '00010011'.

ACK_SEQ - Acknowledgment sequence number.

If VALID_ACK is set to '1' in this message, the base station shall set this field to the MSG_SEQ field from the most recently received Access Channel message requiring an acknowledgment from the mobile station addressed by this message (see 7.6.3.1.1); otherwise, the base station may set this field to any value.

MSG_SEQ - Message sequence number.

The base station shall set this field to the acknowledgment sequence number for this message (see 7.6.2.1.4).

ACK_REQ - Acknowledgment required indicator.

If the mobile station is to acknowledge this message, the base station shall set this field to '1'. If the mobile station is not to acknowledge this message, the base station shall set this field to '0' (see 7.6.3.1.1).

VALID_ACK - Valid acknowledgment indicator.

| | | |
|---|---|---|
| | | To acknowledge the most recently received Access Channel message from the mobile station, the base station shall set this field to '1'. If this message does not acknowledge the most recently received Access Channel message from the mobile station, the base station shall set this field to '0'. |
| ADDR_TYPE | - | Address type.<br>See 7.7.2.3.1. |
| ADDR_LEN | - | Address field length.<br>See 7.7.2.3.1. |
| ADDRESS | - | Mobile station address.<br>See 7.7.2.3.1. |
| RESERVED | - | Reserved bits.<br>The mobile station shall set this field to '00000'. |
| TMSI_ZONE_LEN | - | TMSI zone length.<br>The base station shall set this field to the number of octets included in the TMSI_ZONE. The base station shall set this field to a value in the range 1 to 8 inclusive. |
| TMSI_ZONE | - | TMSI zone.<br>The base station shall set this field to the TMSI zone number, as specified in TIA/EIA/IS-735. |
| TMSI_CODE | - | Temporary mobile station identity code.<br>The base station shall set this field to the 32-bit TMSI code assigned to the mobile station.<br>If the base station is to deassign the TMSI, the base station shall set all the bits in this field to '1'. |
| TMSI_EXP_TIME | - | TMSI expiration time.<br>The base station shall set this field to the System Time in the units of 80 ms × $2^{12}$ when the TMSI is to expire. |
| RESERVED | - | Reserved bits.<br>The base station shall set this field to '00'. |

7.7.2.3.2.20 PACA Message

When the base station sends a *PACA Message*, it shall use the following fixed-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00010100') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| VALID_ACK | 1 |
| ADDR_TYPE | 3 |
| ADDR_LEN | 4 |
| ADDRESS | 8 × ADDR_LEN |
| RESERVED | 7 |
| PURPOSE | 4 |
| Q_POS | 8 |
| PACA_TIMEOUT | 3 |
| RESERVED | 5 |

MSG_TYPE - Message type.

The base station shall set this field to '00010100'.

ACK_SEQ - Acknowledgment sequence number.

If VALID_ACK is set to '1' in this message, the base station shall set this field to the MSG_SEQ field from the most recently received Access Channel message requiring an acknowledgment from the mobile station addressed by this message (see 7.6.3.1.1); otherwise, the base station may set this field to any value.

MSG_SEQ - Message sequence number.

The base station shall set this field to the acknowledgment sequence number for this message (see 7.6.2.1.4).

ACK_REQ - Acknowledgment required indicator.

If the mobile station is to acknowledge this message, the base station shall set this field to '1'. If the mobile station is not to acknowledge this message, the base station shall set this field to '0' (see 7.6.3.1.1).

VALID_ACK - Valid acknowledgment indicator.

To acknowledge the most recently received Access Channel message from the mobile station, the base station shall set this field to '1'. If this message does not acknowledge the most recently received Access Channel message from the mobile station, the base station shall set this field to '0'.

ADDR_TYPE - Address type.

See 7.7.2.3.1.

ADDR_LEN - Address field length.

See 7.7.2.3.1.

ADDRESS - Mobile station address.

See 7.7.2.3.1.

RESERVED - Reserved bits.

The base station shall set this field to '0000000'.

PURPOSE - Purpose of *PACA Message*.

The base station shall set this field to the appropriate PURPOSE code from Table 7.7.2.3.2.20-1 to indicate the purpose of the message.

**Table 7.7.2.3.2.20-1. Purpose of PACA Message**

| PURPOSE (binary) | Meaning |
|---|---|
| 0000 | Indicates that the purpose of the message is to respond to an *Origination Message*. |
| 0001 | Indicates that the purpose of the message is to provide the queue position of the PACA call. |
| 0010 | Indicates that the purpose of the message is to instruct the mobile station to re-originate the PACA call. |
| 0011 | Indicates that the purpose of the message is to cancel the PACA call. |
| 0100 to 1111 | Reserved |

Q_POS - PACA queue position.

If the PURPOSE field of this message is set to '0000' or '0001', the base station shall set this field to the queue position of the PACA call. If the queue position exceeds 255, the base station shall set this field to '11111111'. If the queue position is unknown or the PURPOSE field of this message is set to '0010' or '0011', the base station shall set this field to '00000000'.

PACA_TIMEOUT - PACA state timer duration.

The base station shall set this field to the PACA_TIMEOUT value shown in Table 7.7.2.3.2.20-2 corresponding to the length of the PACA state timer to be used by the mobile stations.

**Table 7.7.2.3.2.20-2. Value of PACA State Timer**

| PACA_TIMEOUT Value (binary) | Timer Length (Minutes) |
|---|---|
| 000 | 1 |
| 001 | 2 |
| 010 | 5 |
| 011 | 10 |
| 100 | 20 |
| 101 | 30 |
| 110 | 45 |
| 111 | 60 |

RESERVED - Reserved bits.

The base station shall set this field to '00000'.

7.7.2.3.2.21 Extended Channel Assignment Message

When the base station sends an *Extended Channel Assignment Message*, it shall use the following variable-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00010101') | 8 |
| One or more occurrences of the following record: | |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| VALID_ACK | 1 |
| ADDR_TYPE | 3 |
| ADDR_LEN | 4 |
| ADDRESS | 8 × ADDR_LEN |
| RESERVED_1 | 1 |
| ADD_RECORD_LEN | 8 |
| ASSIGN_MODE | 3 |
| RESERVED_2 | 5 |
| Additional record fields | 8 × (ADD_RECORD_LEN - 1) |
| RESERVED | 2 |

If ASSIGN_MODE = '000', the additional record fields shall be:

| | |
|---|---|
| FREQ_INCL | 1 |
| DEFAULT_CONFIG | 3 |
| BYPASS_ALERT_ANSWER | 1 |
| RESERVED | 1 |
| NUM_PILOTS | 3 |
| GRANTED_MODE | 2 |
| FRAME_OFFSET | 4 |
| ENCRYPT_MODE | 2 |
| BAND_CLASS | 0 or 5 |
| CDMA_FREQ | 0 or 11 |

NUM_PILOTS plus one occurrences of the following record:

| | |
|---|---|
| PILOT_PN | 9 |
| PWR_COMB_IND | 1 |
| CODE_CHAN | 8 |

| | |
|---|---|
| RESERVED | 0 - 7 (as needed) |

If ASSIGN_MODE = '001', the additional record fields shall be:

| | |
|---|---|
| RESPOND | 1 |
| FREQ_INCL | 1 |
| BAND_CLASS | 0 or 5 |
| CDMA_FREQ | 0 or 11 |
| NUM_PILOTS | 6 |

NUM_PILOTS plus one occurrences of the following field:

| | |
|---|---|
| PILOT_PN | 9 |

| | |
|---|---|
| RESERVED | 0 - 7 (as needed) |

If ASSIGN_MODE = '010', the additional record fields shall be:

| | |
|---|---|
| RESPOND | 1 |
| ANALOG_SYS | 1 |
| USE_ANALOG_SYS | 1 |
| BAND_CLASS | 5 |

If ASSIGN_MODE = '011', the additional record fields shall be:

| | |
|---|---|
| SID | 15 |
| VMAC | 3 |
| ANALOG_CHAN | 11 |
| SCC | 2 |
| MEM | 1 |
| AN_CHAN_TYPE | 2 |
| DSCC_MSB | 1 |
| BAND_CLASS | 5 |

MSG_TYPE - Message type.

The base station shall set this field to '00010101'.

The base station shall include one or more occurrences of the following variable-length assignment record:

ACK_SEQ - Acknowledgment sequence number.

If VALID_ACK is set to '1' in this message, the base station shall set this field to the MSG_SEQ field from the most recently received Access Channel message requiring an acknowledgment from the mobile station addressed by this assignment (see 7.6.3.1.1); otherwise, the base station may set this field to any value.

MSG_SEQ - Message sequence number.

The base station shall set this field to the message sequence number for this assignment (see 7.6.2.1.4).

ACK_REQ - Acknowledgment required indicator.

If the mobile station is to acknowledge this message record, the base station shall set this field to '1'. If the mobile station is not to acknowledge this message record, the base station shall set this field to '0' (see 7.6.3.1.1).

VALID_ACK - Valid acknowledgment indicator.

To acknowledge the most recently received Access Channel message from the mobile station, the base station shall set this field to '1'. If this assignment record does not acknowledge the most recently received Access Channel message from the mobile station, the base station shall set this field to '0'.

ADDR_TYPE - Address type.

See 7.7.2.3.1.

ADDR_LEN - Address field length.

See 7.7.2.3.1.

ADDRESS - Mobile station address.

See 7.7.2.3.1.

RESERVED_1 - Reserved bit.

The base station shall set this field to '0'.

ADD_RECORD_LEN - Additional record length.

The base station shall set this field to one plus the number of octets in the additional record fields included in this assignment record.

ASSIGN_MODE - Assignment mode.

The base station shall set this field to the value shown in Table 7.7.2.3.2.21-1 corresponding to the assignment mode for this assignment.

**Table 7.7.2.3.2.21-1. Assignment Mode**

| Value (binary) | Assignment Mode |
|---|---|
| 000 | Traffic Channel Assignment |
| 001 | Paging Channel Assignment |
| 010 | Acquire Analog System |
| 011 | Analog Voice Channel Assignment |
| All other values are reserved. | |

RESERVED_2 - Reserved bits.

The base station shall set this field to '00000'.

Additional record fields - Additional record fields.

The additional record fields are determined by the value of ASSIGN_MODE, as described below.

RESERVED - Reserved bits.

The base station shall add reserved bits as needed in order to make the length of the entire message equal to an integer number of octets. The base station shall set this field to '00'.

If the ASSIGN_MODE field is set to '000', the base station shall include the following fields:

FREQ_INCL - Frequency included indicator.

If the BAND_CLASS and CDMA_FREQ fields are included in this assignment record, the base station shall set this bit to '1'. If the BAND_CLASS and CDMA_FREQ fields are not included in this assignment record, the base station shall set this bit to '0'.

DEFAULT_CONFIG - Default Configuration.

If the GRANTED_MODE field is set to '00', the base station shall set this field as specified in Table 7.7.2.3.2.21-2 to indicate an initial multiplex option and rate set for the Forward and Reverse Traffic channels.

**Table 7.7.2.3.2.21-2. Default Configuration**

| Value (binary) | Default Configuration |
|---|---|
| 000 | Multiplex Option 1 and Rate Set 1 for both the Forward Traffic Channel and the Reverse Traffic Channel |
| 001 | Multiplex Option 2 and Rate Set 2 for both the Forward Traffic Channel and the Reverse Traffic Channel |
| 010 | Multiplex Option 1 and Rate Set 1 for the Forward Traffic channel; Multiplex Option 2 and Rate Set 2 for the Reverse Traffic channel |
| 011 | Multiplex Option 2 and Rate Set 2 for the Forward Traffic channel; Multiplex Option 1 and Rate Set 1 for the Reverse Traffic channel |
| All other values are reserved. | |

BYPASS_ALERT-_ANSWER - Bypass indicator.

If the base station has received a *Page Response Message* that specifies a packet data service option, and the mobile station is to bypass the Waiting for Order Substate and the Waiting for Mobile Station Answer Substate, the base station shall set this field to '1'. Otherwise, the base station shall set this field to '0'.

RESERVED - Reserved bit.

The base station shall set this field to '0'.

NUM_PILOTS - Number of pilots in the Active Set.

The base station shall set this field to number of pilots that are to be in the mobile station's Active Set on the Traffic Channel minus one. The base station shall set this field to the value in the range 0 to $N_{6m}-1$ inclusive.

GRANTED_MODE - Granted mode.

The base station shall set this field to '00' to indicate that the mobile station is to use an initial service configuration consisting of the multiplex option and rate set defined by the DEFAULT_CONFIG field for the Forward and Reverse Traffic channels, and to indicate that service negotiation is to take place before the base station sends the first *Service Connect Message*.

The base station shall set this field to '01' to indicate that the mobile station is to use an initial service configuration consisting of the default multiplex option and transmission rates corresponding to the service option requested by the mobile station either in the *Origination Message* or *Page Response Message*, and to indicate that service negotiation is to take place before the base station sends the first *Service Connect Message*.

The base station shall set this field to '10' to indicate that the mobile station is to use an initial service configuration consisting of the default multiplex option and transmission rates corresponding to the service option requested by the mobile station either in the *Origination Message* or *Page Response Message*, and to indicate that service negotiation is not to take place before the base station sends the first *Service Connect Message*.

FRAME_OFFSET - Frame offset.

The Forward and Reverse Traffic Channel frames are delayed FRAME_OFFSET × 1.25 ms relative to system timing (see 7.1.3.5.1).

The base station shall set this field to the Forward and Reverse Traffic Channel frame offset.

ENCRYPT_MODE - Message encryption mode.

The base station shall set this field to the ENCRYPT_MODE value shown in Table 7.7.2.3.2.8-2 corresponding to the encrypting mode that is to be used for messages sent on the Forward and Reverse Traffic Channels, as specified in 2.3.12.2.

BAND_CLASS - Band class.

If the FREQ_INCL bit is set to '1', the base station shall set this field to the CDMA band class, as specified in TSB58-A, corresponding to the CDMA frequency assignment for the CDMA Channel containing the Forward Traffic Channel the mobile station is to use. If the FREQ_INCL bit is set to '0', the base station shall omit this field.

CDMA_FREQ - Frequency assignment.

If the FREQ_INCL bit is set to '1', the base station shall set this field to the CDMA Channel number, in the specified CDMA band class, corresponding to the CDMA frequency assignment for the CDMA Channel containing the Forward Traffic Channel the mobile station is to use. If the FREQ_INCL bit is set to '0', the base station shall omit this field.

The base station shall include NUM_PILOTS plus one occurrence of the following three-field record for each member of the mobile station's Active Set on the Traffic Channel.

PILOT_PN - Pilot PN sequence offset index.

The base station shall set this field to the pilot PN sequence offset for this pilot in units of 64 PN chips.

PWR_COMB_IND - Power control symbol combining indicator.

If the Forward Traffic Channel associated with this pilot will carry the same closed-loop power control subchannel bits as that of the previous pilot in this message, the base station shall set this field to '1'; otherwise, the base station shall set this field to '0'. For the first occurrence of this record in the message, the base station shall set this field to '0'.

CODE_CHAN - Code channel index.

The base station shall set this field to the code channel index (see 7.1.3.1.8) in the range 1 to 63 inclusive that the mobile station is to use on the Forward Traffic Channel associated with this pilot.

RESERVED - Reserved bits.

The base station shall add reserved bits as needed in order to make the total length of the fields after the preceding ADD_RECORD_LEN field through this RESERVED field equal to an integer number of octets. The base station shall set these bits to '0'.

If the ASSIGN_MODE field is set to '001', the base station shall include the following fields:

RESPOND - Respond on new Access Channel indicator.

If the mobile station is to retransmit an *Origination Message* or *Page Response Message* after processing this channel assignment, the base station shall set this field to '1'. The base station may set this field to '0' only in response to a *Page Response Message*.

FREQ_INCL - Frequency included indicator.

If the BAND_CLASS and CDMA_FREQ fields are included in this assignment record, the base station shall set this bit to '1'. If the BAND_CLASS and CDMA_FREQ fields are not included in this assignment record, the base station shall set this bit to '0'.

BAND_CLASS - Band class.

If the FREQ_INCL bit is set to '1', the base station shall set this field to the CDMA band class, as specified in TSB58-A, corresponding to the CDMA frequency assignment for the CDMA Channel containing the Paging Channel the mobile station is to use. If the FREQ_INCL bit is set to '0', the base station shall omit this field.

CDMA_FREQ - Frequency assignment.

If the FREQ_INCL bit is set to '1', the base station shall set this field to the CDMA Channel number, in the specified CDMA band class, corresponding to the CDMA frequency assignment for the CDMA Channel containing the Paging Channel the mobile station is to use. If the FREQ_INCL bit is set to '0', the base station shall omit this field.

NUM_PILOTS - Number of pilots whose Paging Channel may be monitored.

The base station shall set this field to the number of pilots whose Paging Channel may be monitored by the mobile station minus one. The base station shall set this field to the value in the range 0 to $N_{8m}$ - 1 inclusive.

The base station shall include NUM_PILOTS plus one occurrence of the following field record for each pilot whose Paging Channel may be monitored by the mobile station.

PILOT_PN - Pilot PN sequence offset index.

The base station shall include one occurrence of this field for each base station whose Paging Channel may be monitored by the mobile station. For each occurrence, the base station shall set this field to the pilot PN sequence offset for a base station, in units of 64 PN chips. The base station having this pilot PN sequence offset should support a Primary Paging Channel with the same Paging Channel rate as the current base station.

RESERVED - Reserved bits.

The base station shall add reserved bits as needed in order to make the total length of the fields after the preceding ADD_RECORD_LEN field through this RESERVED field equal to an integer number of octets. The base station shall set these bits to '0'.

If the ASSIGN_MODE field is set to '010', the base station shall include the following fields:

RESPOND - Respond on analog control channel indicator.

If the mobile station is to retransmit an *Origination Message* or *Page Response Message* (see 2.7.1.1) on the analog control channel after processing this channel assignment, the base station shall set this field to '1'. The base station may set this field to '0' only in response to a *Page Response Message*.

ANALOG_SYS - System indicator.

If USE_ANALOG_SYS is equal to '0', the base station shall set this field to '0'; otherwise, the base station shall set this field to '0' if the mobile station is to use analog system A, or to '1' if the mobile station is to use analog system B.

USE_ANALOG_SYS - Use analog system indicator.

The base station shall set this field to '1' to direct the mobile station to the analog system specified by ANALOG_SYS; otherwise, the base station shall set this field to '0'.

BAND_CLASS - Band class.

The base station shall set this field according to values defined in TSB58-A.

If the ASSIGN_MODE field is set to '011', the base station shall include the following fields:

SID - System identification of the analog system.

The base station shall set this field to the system identification of the analog system supporting the assigned voice channel for this assignment (see 2.3.8).

VMAC - Voice mobile station attenuation code.

The base station shall set this field to the mobile station power level associated with the assigned voice channel for this assignment (see 2.1.2).

ANALOG_CHAN - Voice channel number.

The base station shall set this field to the voice channel number for this assignment (see 2.1.1.1).

SCC - SAT color code. The base station shall set this field to the supervisory audio tone associated with the assigned voice channel. If the assignment is to a narrow analog channel, the base station shall set this field to the two least significant bits of the DSCC.

MEM - Message encryption mode indicator.

If analog control message encryption is to be enabled on the assigned forward and reverse analog voice channels, the base station shall set this bit to '1'; otherwise, the base station shall set this bit to '0'.

AN_CHAN_TYPE - Analog voice channel type.

The base station shall set this field to the analog channel type as specified in Table 7.7.3.3.2.6-1. If the mobile station does not have narrow analog capability the bits shall be set to '00'.

DSCC_MSB - Digital supervisory audio tone color code most significant bit.

The base station shall set this field to '0' when directing handoff to a wide analog channel. The base station shall set this field to the most significant bit of the DSCC when directing handoff to a narrow analog channel.

BAND_CLASS - Band class.

The base station shall set this field according to values defined in TSB58-A.

7.7.2.3.2.22 General Neighbor List Message

When the base station sends a *General Neighbor List Message*, it shall use the following variable-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00010110') | 8 |
| PILOT_PN | 9 |
| CONFIG_MSG_SEQ | 6 |
| PILOT_INC | 4 |
| NGHBR_SRCH_MODE | 2 |
| NGHBR_CONFIG_PN_INCL | 1 |
| FREQ_FIELDS_INCL | 1 |
| USE_TIMING | 1 |
| GLOBAL_TIMING_INCL | 0 or 1 |
| GLOBAL_TX_DURATION | 0 or 4 |
| GLOBAL_TX_PERIOD | 0 or 7 |
| NUM_NGHBR | 6 |
| NUM_NGHBR occurrences of the following record: | |
| NGHBR_CONFIG | 0 or 3 |
| NGHBR_PN | 0 or 9 |
| SEARCH_PRIORITY | 0 or 2 |
| SRCH_WIN_NGHBR | 0 or 4 |
| FREQ_INCL | 0 or 1 |
| NGHBR_BAND | 0 or 5 |
| NGHBR_FREQ | 0 or 11 |
| TIMING_INCL | 0 or 1 |
| NGHBR_TX_OFFSET | 0 or 7 |
| NGHBR_TX_DURATION | 0 or 4 |
| NGHBR_TX_PERIOD | 0 or 7 |
| (End of record) | |

(continues on next page)

| | |
|---|---|
| NUM_ANALOG_NGHBR | 3 |

NUM_ANALOG_NGHBR occurrences of the following record:

| | |
|---|---|
| BAND_CLASS | 5 |
| SYS_A_B | 2 |

| | |
|---|---|
| RESERVED | 0 - 7 (as needed) |

MSG_TYPE - Message type.

The base station shall set this field to '00010110'.

PILOT_PN - Pilot PN sequence offset index.

The base station shall set this field to the pilot PN sequence offset for this base station, in units of 64 PN chips.

CONFIG_MSG_SEQ - Configuration message sequence number.

The base station shall set this field to CONFIG_SEQ (see 7.6.2.2).

PILOT_INC - Pilot PN sequence offset index increment.

A mobile station searches for Remaining Set pilots at pilot PN sequence index values that are multiples of this value.

The base station shall set this field to the pilot PN sequence increment, in units of 64 PN chips, that mobile stations are to use for searching the Remaining Set. The base station should set this field to the largest increment such that the pilot PN sequence offsets of all its neighbor base stations are integer multiples of that increment.

The base station shall set this field to a value in the range 1 to 15 inclusive.

NGHBR_SRCH_MODE - Search mode.

The base station shall set this field to the value shown in Table 7.7.2.3.2.22-1 corresponding to the search mode.

**Table 7.7.2.3.2.22-1. Search Mode Field**

| Value (binary) | Description |
|---|---|
| 00 | No search priorities or search windows |
| 01 | Search priorities |
| 10 | Search windows |
| 11 | Search windows and search priorities |

NGHBR_CONFIG-_PN_INCL - Neighbor configuration and PN offset included.

If neighbor configuration and PN offset fields are included in this message, the base station shall set this field to '1'; otherwise, the base station shall set this field to '0'.

FREQ_FIELDS_INCL - Frequency fields included.

If frequency fields are included in this message, the base station shall set this field to '1'; otherwise, the base station shall set this field to '0'.

USE_TIMING - Use timing indicator.

If base station timing information is included for neighbor base stations, the base station shall set this field to '1'; otherwise, the base station shall set this field to '0'.

GLOBAL_TIMING-_INCL - Global timing included.

If USE_TIMING is set to '1', the base station shall include the field GLOBAL_TIMING_INCL and set this field as described below; otherwise, the base station shall omit this field.

If base station timing information is included globally for all neighbor base stations with TIMING_INCL equal to '1', the base station shall set this field to '1'; otherwise, the base station shall set this field to '0'.

GLOBAL_TX-_DURATION - Global neighbor transmit time duration.

If GLOBAL_TIMING_INCL is included and is set to '1', the base station shall include the field GLOBAL_TX_DURATION and shall set this field as described below; otherwise, the base station shall omit this field.

The base station shall set this field to the duration of the base station transmit window, during each period, in units of 80 ms. The base station should set this field to a value of 3 or greater.

| | | |
|---|---|---|
| GLOBAL_TX-_PERIOD | - | Global neighbor transmit time period.<br><br>If GLOBAL_TIMING_INCL is included and is set to '1', the base station shall include the field GLOBAL_TX_DURATION and shall set this field as described below; otherwise, the base station shall omit this field.<br><br>The base station shall set this field to duration of the period, in units of 80 ms. |
| NUM_NGHBR | - | Number of neighbor pilot PN sequences.<br><br>The base station shall set this field to the number of neighbors included in the message. |

The base station shall include one occurrence of the following record for each pilot that a mobile station is to place in its Neighbor Set. The base station shall use the same order for the following record in this message as is used for pilots which are listed in the *Neighbor List Message* or *Extended Neighbor List Message*. Specifically, the $i^{th}$ occurrence of the following record shall correspond the $i^{th}$ pilot in the *Neighbor List Message* or in the *Extended Neighbor List Message*.

| | | |
|---|---|---|
| NGHBR_CONFIG | - | Neighbor configuration.<br><br>If NGHBR_CONFIG_PN_INCL = '1', the base station shall set this field to the value shown in Table 7.7.2.3.2.22-2 corresponding to the configuration of this neighbor; otherwise, the base station shall omit this field. |

**Table 7.7.2.3.2.22-2. Neighbor Configuration Field**

| Value (binary) | Neighbor Configuration |
|---|---|
| 000 | The neighbor base station has the same number of frequencies having Paging Channels as the current base station and has a CDMA frequency assignment corresponding to this CDMA frequency assignment with the same number of Paging Channels. If FREQ_INCL equals '0' for this record, this corresponding CDMA frequency assignment is the current CDMA frequency assignment. If FREQ_INCL equals '1' for this record, this corresponding CDMA frequency assignment is given by NGHBR_BAND and NGHBR_FREQ. |
| 001 | The neighbor base station has the same number of frequencies having Paging Channels as the current base station and has a CDMA frequency assignment corresponding to this CDMA frequency assignment with a different number of Paging Channels. This corresponding frequency assignment does have a Primary Paging Channel. If FREQ_INCL equals '0' for this record, this corresponding CDMA frequency assignment is the current CDMA frequency assignment. If FREQ_INCL equals '1' for this record, this corresponding CDMA frequency assignment is given by NGHBR_BAND and NGHBR_FREQ. |
| 010 | The neighbor base station may have a different number of frequencies having Paging Channels as the current base station. If FREQ_INCL equals '0' for this record, the neighbor base station has a Primary Paging Channel on the first CDMA Channel listed in the *CDMA Channel List Message* transmitted by the current base station. If FREQ_INCL equals '1' for this record, the neighbor base station has a Primary Paging Channel on the CDMA frequency assignment given by NGHBR_BAND and NGHBR_FREQ. |
| 011 | The neighbor base station configuration is unknown. If FREQ_INCL equals '0' for this record, this CDMA frequency assignment has a Pilot Channel. If FREQ_INCL equals '1' for this record, the CDMA frequency assignment given by NGHBR_BAND and NGHBR_FREQ has a Pilot Channel. |
| 100-111 | Reserved. |

NGHBR_PN - Neighbor pilot PN sequence offset index.

If NGHBR_CONFIG_PN_INCL = '1', the base station shall set this field to the pilot PN sequence offset for this neighbor, in units of 64 PN chips; otherwise, the base station shall omit this field.

SEARCH_PRIORITY - Pilot Channel search priority.

If the NGHBR_SRCH_MODE = '01' or NGHBR_SRCH_MODE = '11', then the base station shall set this field to the search priority for the Pilot Channel corresponding to NGHBR_PN. The base station shall set the search priority as shown in

Table 7.7.2.3.2.22-3. If the NGHBR_SRCH_MODE is set to any other value, the base station shall omit this field.

**Table 7.7.2.3.2.22-3. Search Priority Field**

| Value (binary) | Search Priority |
|---|---|
| 00 | Low |
| 01 | Medium |
| 10 | High |
| 11 | Very high |

SRCH_WIN_NGHBR - Neighbor pilot channel search window size.

If NGHBR_SRCH_MODE = '10' or '11', then the base station shall set this field to the value shown in Table 6.6.6.2.1-1 corresponding to the search window size to be used by mobile stations for this neighbor. If the NGHBR_SRCH_MODE is set to any other value, the base station shall omit this field.

FREQ_INCL - Frequency included indicator.

If FREQ_FIELDS_INCL is set to '0', the base station shall omit this field; otherwise, the base station shall set this field as follows:

If the NGHBR_BAND and NGHBR_FREQ fields are included for this neighbor base station, the base station shall set this bit to '1'. If the NGHBR_BAND and NGHBR_FREQ fields are not included in this assignment record, the base station shall set this bit to '0'.

NGHBR_BAND - Neighbor band class.

If the FREQ_INCL bit is included and is set to '1', the base station shall set this field to the CDMA band class, as specified in TSB58-A, corresponding to the CDMA frequency assignment for the CDMA Channel containing the Paging Channel the mobile station is to search. If the FREQ_INCL bit is omitted or is set to '0', the base station shall omit this field.

NGHBR_FREQ - Neighbor frequency assignment.

If the FREQ_INCL bit is included and is set to '1', the base station shall set this field to the CDMA Channel number, in the specified CDMA band class, corresponding to the CDMA frequency assignment for the CDMA Channel containing the Paging Channel the mobile station is to search. If the FREQ_INCL bit is omitted or is set to '0', the base station shall omit this field.

TIMING_INCL - Timing included indicator.

If USE_TIMING is set to '1', the base station shall include the field TIMING_INCL and set this field as described below; otherwise, the base station shall omit this field.

If base station timing information is included for this neighbor base station, the base station shall set this field to '1'; otherwise, the base station shall set this field to '0'.

NGHBR_TX_OFFSET - Neighbor transmit time offset.

If TIMING_INCL is included and is set to '1', the base station shall include the field NGHBR_TX_OFFSET and set this field as described below; otherwise, the base station shall omit this field.

The base station shall set this field to the time offset, in units of 80 ms, from the beginning of the neighbor timing period to the beginning of the first base station transmit window within the period. The beginning of the neighbor timing period occurs when $\lfloor t/4 \rfloor \bmod (16384) = 0$.

NGHBR_TX_DURATION - Neighbor transmit time duration.

If TIMING_INCL is included and is set to '1' and GLOBAL_TIMING_INCL is set to '0', the base station shall include the field NGHBR_TX_DURATION and set this field as described below; otherwise, the base station shall omit this field.

The base station shall set this field to duration of the base station transmit window, during each period, in units of 80 ms. The base station should set this field to a value of 3 or greater.

NGHBR_TX_PERIOD - Neighbor transmit time period.

If TIMING_INCL is included and is set to '1' and GLOBAL_TIMING_INCL is set to '0', the base station shall include the field NGHBR_TX_PERIOD and set this field as described below; otherwise, the base station shall omit this field.

The base station shall set this field to duration of the period, in units of 80 ms.

NUM_ANALOG_NGHBR - Number of neighboring analog systems.

The base station shall set this field to the number of neighboring analog systems included in the message.

The base station shall include one occurrence of the following record for each neighboring analog system included in the message:

BAND_CLASS - Band class.

The base station shall set this field to the CDMA band class, as specified in TSB58-A.

SYS_A_B - System A/B.

If BAND_CLASS is set to '00000', the base station shall set this field to the value shown in Table 7.7.2.3.2.22-4 corresponding to the availability of neighboring analog systems; otherwise, the base station shall set this field to '00'.

**Table 7.7.2.3.2.22-4. Cellular System A/B**

| Cellular System A/B | Value |
|---|---|
| RESERVED | 00 |
| System A | 01 |
| System B | 10 |
| System A and B | 11 |

RESERVED - Reserved bits.

The base station shall add reserved bits as needed in order to make the length of the entire message equal to an integer number of octets. The base station shall set these bits to '0'.

7.7.2.3.2.23 Null Message

When the base station sends a *Null Message*, it shall use the following fixed-length message format:

| Field | Length (bits) |
|---|---|
| RESERVED | 2 |

RESERVED - Reserved bits.

The base station shall set this field to '00'.

### 7.7.3 Forward Traffic Channel

During Traffic Channel operation, the base station sends signaling messages to the mobile station using the Fundamental Code Channel of the Forward Traffic Channel.

#### 7.7.3.1 Forward Traffic Channel Structure

When sending a Forward Traffic Channel message, the base station shall send it as signaling traffic using the signaling traffic formats specified in 7.1.3.5.12, 7.1.3.5.13, 7.1.3.5.14, and 7.1.3.5.15. The base station may use one or more Forward Traffic Channel frames to send the message.

The first signaling traffic bit in a Forward Traffic Channel frame shall be a Start of Message (SOM) Bit. The base station shall set this bit to '1' if a Forward Traffic Channel message begins in the frame, or to '0' if the frame contains bits of a Forward Traffic Channel message that began in a previous frame. The base station shall use the remaining signaling traffic bits of the frame to send Forward Traffic Channel message bits. If the frame used to send the last bits of a message contains any unused signaling traffic bits, the base station shall set each of these bits, referred to as padding bits, to '0'.

#### 7.7.3.2 Forward Traffic Channel Message Structure

A Forward Traffic Channel message shall consist of a length field (MSG_LENGTH), a message body, and a CRC field, in that order (see Figure 7.7.3.2-1).

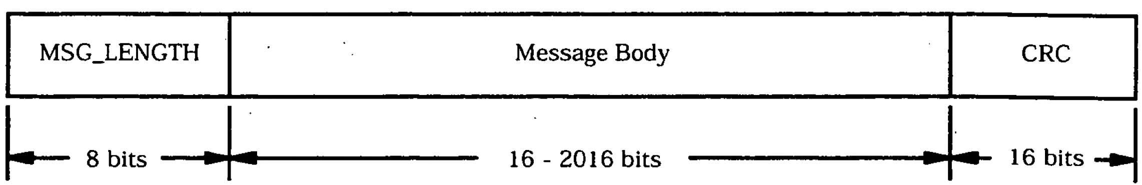


**Figure 7.7.3.2-1. Forward Traffic Channel Message Structure**

##### 7.7.3.2.1 Forward Traffic Channel Message MSG_LENGTH Field

The base station shall set the MSG_LENGTH field of a Forward Traffic Channel message to the length, in octets, of the message, including the MSG_LENGTH field, the message body and the CRC field. The MSG_LENGTH field shall be 8 bits in length. The minimum value of the MSG_LENGTH field shall be 5.[18] Base stations may send Forward Traffic Channel messages of length up to 255 octets or 2040 bits.

[18] This accommodates the MSG_LENGTH field, the layer 2 fields present in the Message Body, and the CRC field.

#### 7.7.3.2.2 Forward Traffic Channel Message CRC Field

The base station shall set the CRC field of a Forward Traffic Channel message to the CRC computed for the message. The CRC computation shall include the MSG_LENGTH field and the message body. The CRC field shall be 16 bits in length.

The generator polynomial for the CRC shall be the standard CRC-CCITT polynomial:

$$g(x) = x^{16} + x^{12} + x^{5} + 1.$$

The CRC shall be equal to the value computed by the following procedure and the logic shown in Figure 7.7.3.2.2-1:

- All shift register elements shall be initialized to logical one.[19]
- The switches shall be set in the up position.
- The information bit count k shall be defined as 8 + message body length in bits.
- The register shall be clocked k times, with the length and message body fields of the message as the k input bits.
- The switches shall be set in the down position so that the output is a modulo-2 addition with a '1' and the successive shift register inputs are '0'.
- The register shall be clocked an additional 16 times.
- The 16 additional output bits shall be the CRC field.
- The bits shall be transmitted in the order in which they appear at the output of the CRC encoder.

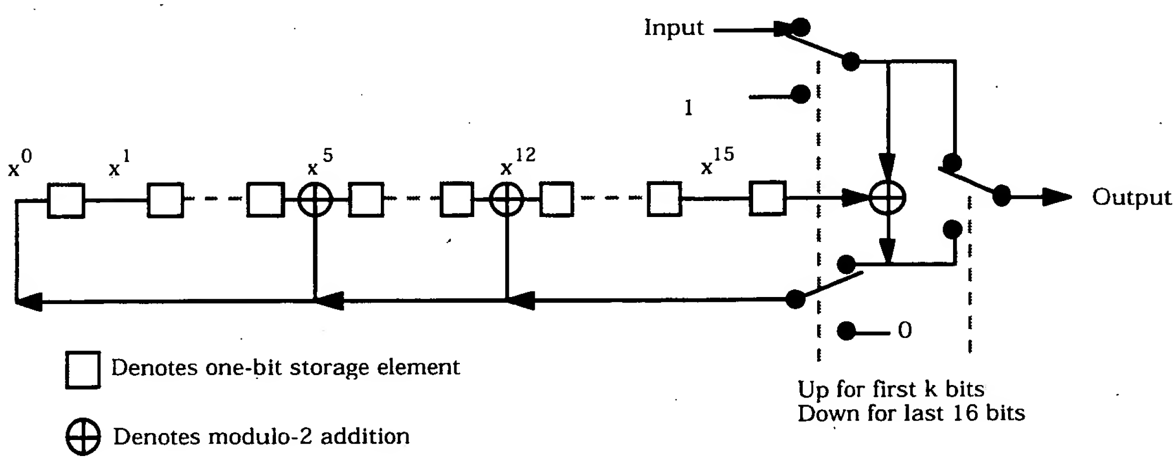


**Figure 7.7.3.2.2-1. Forward Traffic Channel Signaling CRC Calculation**

[19] Initialization of the register to ones causes the CRC for all-zero data to be non-zero.

## 7.7.3.3 Forward Traffic Channel Message Body Formats

The signaling messages sent over the Forward Traffic Channel are summarized in Table 7.7.3.3-1.

**Table 7.7.3.3-1. Forward Traffic Channel Messages (Part 1 of 2)**

| Message Name | Message Type (binary) | Section Number |
|---|---|---|
| *Order Message* | 00000001 | 7.7.3.3.2.1 |
| *Authentication Challenge Message* | 00000010 | 7.7.3.3.2.2 |
| *Alert With Information Message* | 00000011 | 7.7.3.3.2.3 |
| *Data Burst Message* | 00000100 | 7.7.3.3.2.4 |
| *Reserved for obsolete Handoff Direction Message* | 00000101 | 7.7.3.3.2.5 |
| *Analog Handoff Direction Message* | 00000110 | 7.7.3.3.2.6 |
| *In-Traffic System Parameters Message* | 00000111 | 7.7.3.3.2.7 |
| *Neighbor List Update Message* | 00001000 | 7.7.3.3.2.8 |
| *Send Burst DTMF Message* | 00001001 | 7.7.3.3.2.9 |
| *Power Control Parameters Message* | 00001010 | 7.7.3.3.2.10 |
| *Retrieve Parameters Message* | 00001011 | 7.7.3.3.2.11 |
| *Set Parameters Message* | 00001100 | 7.7.3.3.2.12 |
| *SSD Update Message* | 00001101 | 7.7.3.3.2.13 |
| *Flash With Information Message* | 00001110 | 7.7.3.3.2.14 |
| *Mobile Station Registered Message* | 00001111 | 7.7.3.3.2.15 |
| *Status Request Message* | 00010000 | 7.7.3.3.2.16 |
| *Extended Handoff Direction Message* | 00010001 | 7.7.3.3.2.17 |
| *Service Request Message* | 00010010 | 7.7.3.3.2.18 |
| *Service Response Message* | 00010011 | 7.7.3.3.2.19 |
| *Service Connect Message* | 00010100 | 7.7.3.3.2.20 |
| *Service Option Control Message* | 00010101 | 7.7.3.3.2.21 |
| *TMSI Assignment Message* | 00010110 | 7.7.3.3.2.22 |
| *Service Redirection Message* | 00010111 | 7.7.3.3.2.23 |
| *Supplemental Channel Assignment Message* | 00011000 | 7.7.3.3.2.24 |
| *Power Control Message* | 00011001 | 7.7.3.3.2.25 |

**Table 7.7.3.3-1. Forward Traffic Channel Messages (Part 2 of 2)**

| Message Name | Message Type (binary) | Section Number |
|---|---|---|
| *Extended Neighbor List Update Message* | 00011010 | 7.7.3.3.2.26 |
| *Candidate Frequency Search Request Message* | 00011011 | 7.7.3.3.2.27 |
| *Candidate Frequency Search Control Message* | 00011100 | 7.7.3.3.2.28 |
| *Power Up Function Message* | 00011101 | 7.7.3.3.2.29 |
| *Power Up Function Completion Message* | 00011110 | 7.7.3.3.2.30 |
| *General Handoff Direction Message* | 00011111 | 7.7.3.3.2.31 |

7.7.3.3.1 Common Fields

7.7.3.3.1.1 Common Acknowledgment Fields

All Forward Traffic Channel messages share the same acknowledgment fields:

ACK_SEQ - Acknowledgment sequence number.

The base station shall set this field to the value of the MSG_SEQ field from the most recently received Reverse Traffic Channel message requiring acknowledgment (see 7.6.4.1.3).

MSG_SEQ - Message sequence number.

The base station shall set this field to the message sequence number for this message (see 7.6.4.1.3).

ACK_REQ - Acknowledgment required indicator.

This field indicates whether this message requires an acknowledgment.

To indicate that this message requires acknowledgment, the base station shall set this field to '1'. To indicate that this message does not require acknowledgment, the base station shall set this field to '0'.

7.7.3.3.1.2 Common Encryption Field

All Forward Traffic Channel messages contain the following field:

ENCRYPTION - Message encryption indicator.

The base station shall set this field to the current message encryption mode, equal to the ENCRYPT_MODE field of the last transmitted *Channel Assignment Message* directed to the mobile station, *Extended Handoff Direction Message*, *General Handoff Direction Message*, or *Message Encryption Mode Order*. The value of this field and the encryption state of a message shall not change if the same message is retransmitted.

#### 7.7.3.3.2 Message Body Contents

The following sections specify the contents of the message body for each message that may be sent on the Forward Traffic Channel.

##### 7.7.3.3.2.1 Order Message

When the base station sends an *Order Message*, it shall use the following variable-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00000001') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| ENCRYPTION | 2 |
| USE_TIME | 1 |
| ACTION_TIME | 6 |
| ORDER | 6 |
| ADD_RECORD_LEN | 3 |
| order-specific fields (if used) | 8 × ADD_RECORD_LEN |
| RESERVED | 7 |

MSG_TYPE - Message type.

The base station shall set this field to '00000001'.

ACK_SEQ - Acknowledgment sequence number.

See 7.7.3.3.1.1.

MSG_SEQ - Message sequence number.

See 7.7.3.3.1.1.

ACK_REQ - Acknowledgment required indicator.

See 7.7.3.3.1.1.

ENCRYPTION - Message encryption indicator.

See 7.7.3.3.1.2.

USE_TIME - Use action time indicator.

This field indicates whether an ACTION_TIME is specified in this order.

If an ACTION_TIME can be specified for this order code, as shown in table 7.7.4-1, the base station may set this field to '1'; otherwise, the base station shall set this field to '0'.

ACTION_TIME - Action time.

If the USE_TIME field is set to '1', the base station shall set this field to the System Time, in units of 80 ms (modulo 64), at which the order is to take effect. If the USE_TIME field is set to '0' the base station shall set this field to '000000'.

ORDER - Order code.

The base station shall set this field to the ORDER code for this type of *Order Message* (see 7.7.4).

ADD_RECORD_LEN - Additional record length.

The base station shall set this field to the number of octets in the order-specific fields included in this message.

order-specific fields - Order-specific fields.

The base station shall include order-specific fields as specified in 7.7.4.

RESERVED - Reserved bits.

The base station shall set these bits to '0000000'.

#### 7.7.3.3.2.2 Authentication Challenge Message

When the base station sends an *Authentication Challenge Message* on the Forward Traffic Channel, it shall use the following fixed-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00000010') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| ENCRYPTION | 2 |
| RANDU | 24 |
| RESERVED | 7 |

MSG_TYPE - Message type.
The base station shall set this field to '00000010'.

ACK_SEQ - Acknowledgment sequence number.
See 7.7.3.3.1.1.

MSG_SEQ - Message sequence number.
See 7.7.3.3.1.1.

ACK_REQ - Acknowledgment required indicator.
See 7.7.3.3.1.1.

ENCRYPTION - Message encryption indicator.
See 7.7.3.3.1.2.

RANDU - Random challenge data.
The base station shall set this field as specified in 6.3.12.1.5.

RESERVED - Reserved bits.
The base station shall set these bits to '0000000'.

#### 7.7.3.3.2.3 Alert With Information Message

When the base station sends an *Alert With Information Message*, it shall use the following variable-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00000011') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| ENCRYPTION | 2 |
| Zero or more occurrences of the following record: | |
| RECORD_TYPE | 8 |
| RECORD_LEN | 8 |
| Type-specific fields | 8 × RECORD_LEN |
| RESERVED | 7 |

MSG_TYPE - Message type.

The base station shall set this field to '00000011'.

ACK_SEQ - Acknowledgment sequence number.

See 7.7.3.3.1.1.

MSG_SEQ - Message sequence number.

See 7.7.3.3.1.1.

ACK_REQ - Acknowledgment required indicator.

See 7.7.3.3.1.1.

ENCRYPTION - Message encryption indicator.

See 7.7.3.3.1.2.

The base station shall include occurrences of the following three-field record as specified in 7.7.5.

RECORD_TYPE - Information record type.

The base station shall set this field as specified in 7.7.5.

RECORD_LEN - Information record length.

The base station shall set this field to the number of octets in the type-specific fields included in this record.

| | | |
|---|---|---|
| type-specific fields | - | Type-specific fields. |
| | | The base station shall include type-specific fields as specified in 7.7.5. |
| RESERVED | - | Reserved bits. |
| | | The base station shall set these bits to '0000000'. |

7.7.3.3.2.4 Data Burst Message

When the base station sends a *Data Burst Message* on the Forward Traffic Channel, it shall use the following variable-length message:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00000100') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| ENCRYPTION | 2 |
| MSG_NUMBER | 8 |
| BURST_TYPE | 6 |
| NUM_MSGS | 8 |
| NUM_FIELDS | 8 |
| NUM_FIELDS occurrences of the following field: | |
| CHARi | 8 |
| | |
| RESERVED | 1 |

MSG_TYPE - Message type.

The base station shall set this field to '00000100'.

ACK_SEQ - Acknowledgment sequence number.

See 7.7.3.3.1.1.

MSG_SEQ - Message sequence number.

See 7.7.3.3.1.1.

ACK_REQ - Acknowledgment required indicator.

See 7.7.3.3.1.1.

ENCRYPTION - Message encryption indicator.

See 7.7.3.3.1.2.

MSG_NUMBER - Message number.

The base station shall set this field to the number of this message within the data burst stream.

BURST_TYPE - Data burst type.

The base station shall set the value of this field for the type of this data burst as defined in TSB58-A. If the base station sets this field equal to '111110', it shall set the first two CHARi fields of this message equal to the EXTENDED_BURST_TYPE_INTERNATIONAL as described in the definition of CHARi below. If the base station sets this field equal to '111111', it shall set the first two CHARi fields of this message equal to the EXTENDED_BURST_TYPE as described in the definition of CHARi below.

NUM_MSGS - Number of messages in the data burst stream.

The base station shall set this field to the number of messages in this data burst stream.

NUM_FIELDS - Number of characters in this message.

The base station shall set this field to the number of occurrences of the CHARi field included in this message.

CHARi - Character.

The base station shall include NUM_FIELDS occurrences of this field. The base station shall set these fields to the corresponding octet of the data burst stream.

If the BURST_TYPE field of this message is equal to '111110', the first two CHARi octets shall represent a 16 bit EXTENDED_BURST_TYPE_INTERNATIONAL field, which is encoded as shown below. The first ten bits of this field contain a binary mapping of the Mobile Country Code (MCC) associated with the national standards organization administering the use of the remaining octets of the message. Encoding of the MCC shall be as specified in 6.3.1.3. The remaining six bits of the EXTENDED_BURST_TYPE_INTERNATIONAL shall specify the COUNTRY_BURST_TYPE. The base station shall set the value of the COUNTRY_BURST_TYPE according to the type of this data burst as defined in standards governed by the country where this data burst type is to be used.

| **Field** | **Length (bits)** |
|---|---|
| Mobile Country Code | 10 |
| COUNTRY_BURST_TYPE | 6 |
| Remaining CHARi fields | 8 × (NUM_FIELDS - 2) |

If the BURST_TYPE field of this message is equal to '111111', the first two CHARi octets shall represent a single, 16 bit, EXTENDED_BURST_TYPE field, as shown below. The base station shall set the value of the EXTENDED_BURST_TYPE field according to the type of this data burst as defined in TSB58-A.

| Field | Length (bits) |
|---|---|
| EXTENDED_BURST_TYPE (first two CHARi fields) | 16 |
| Remaining CHARi fields | 8 x (NUM_FIELDS - 2) |

RESERVED - Reserved bits.

The base station shall set this field to '0'.

7.7.3.3.2.5 Reserved

#### 7.7.3.3.2.6 Analog Handoff Direction Message

When the base station sends an *Analog Handoff Direction Message*, it shall use the following fixed-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00000110') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| ENCRYPTION | 2 |
| USE_TIME | 1 |
| ACTION_TIME | 6 |
| SID | 15 |
| VMAC | 3 |
| ANALOG_CHAN | 11 |
| SCC | 2 |
| MEM | 1 |
| AN_CHAN_TYPE | 2 |
| DSCC_MSB | 1 |
| BAND_CLASS | 5 |

MSG_TYPE - Message type.

The base station shall set this field to '00000110'.

ACK_SEQ - Acknowledgment sequence number.

See 7.7.3.3.1.1.

MSG_SEQ - Message sequence number.

See 7.7.3.3.1.1.

ACK_REQ - Acknowledgment required indicator.

See 7.7.3.3.1.1.

ENCRYPTION - Message encryption indicator.

See 7.7.3.3.1.2.

USE_TIME - Use action time indicator.

This field indicates whether an ACTION_TIME is specified in this message.

If an ACTION_TIME is specified in this message, the base station shall set this field to '1'; otherwise, the base station shall set this field to '0'.

ACTION_TIME - Action time.

If the USE_TIME field is set to '1', the base station shall set this field to the System Time, in units of 80 ms (modulo 64), at which the handoff is to take effect. If the USE_TIME field is set to '0' the base station shall set this field to '000000'.

SID - System identification of the analog system.

The base station shall set this field to the system identification number for the analog system (see 2.3.8).

VMAC - Voice mobile station attenuation code.

This field indicates the mobile station's power level associated with the designated voice channel.

The base shall set this field to the MAC value shown in Table 2.1.2.2-1 corresponding to the nominal power for this mobile station.

ANALOG_CHAN - Analog voice channel number.

The base station shall set this field to the channel number of the analog voice channel, as specified in Table 2.1.1.1-1.

SCC - SAT color code.

This indicates the supervisory audio tone associated with the designated analog voice channel.

The base station shall set this field to the SAT value shown in Table 3.7.1.1-2 (see 2.4.1).

If the assignment is to a narrow analog channel, the base station shall set this field to the two least significant bits of the DSCC.

MEM - Message encryption mode indicator.

To enable analog control message encryption on the assigned forward and reverse analog voice channels, the base station shall set this bit to '1'. To disable analog control message encryption, the base station shall set this bit to '0'.

AN_CHAN_TYPE - Analog voice channel type.

The base station shall set this field to the analog channel type as specified in Table 7.7.3.3.2.6-1. If the mobile station does not have narrow analog capability the bits shall be set to '00'.

**Table 7.7.3.3.2.6-1. Analog Channel Type**

| Description | Analog Ch | AN_CHAN_TYPE |
|---|---|---|
| Wide channel on ANALOG_CHAN | N | 00 |
| Narrow channel 10 kHz below ANALOG_CHAN | NL | 01 |
| Narrow channel 10 kHz above ANALOG_CHAN | NU | 10 |
| Narrow channel centered on ANALOG_CHAN | NM | 11 |

DSCC_MSB - Digital supervisory audio tone color code most significant bit.

The base station shall set this field to '0' when directing handoff to a wide analog channel. The base station shall set this field to the most significant bit of the DSCC when directing handoff to a narrow analog channel.

BAND_CLASS - Band class.

The base station shall set this field according to values defined in TSB58-A.

### 7.7.3.3.2.7 In-Traffic System Parameters Message

When the base station sends an *In-Traffic System Parameters Message*, it shall use the following variable-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00000111') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| ENCRYPTION | 2 |
| SID | 15 |
| NID | 16 |
| SRCH_WIN_A | 4 |
| SRCH_WIN_N | 4 |
| SRCH_WIN_R | 4 |
| T_ADD | 6 |
| T_DROP | 6 |
| T_COMP | 4 |
| T_TDROP | 4 |
| NGHBR_MAX_AGE | 4 |
| P_REV | 8 |
| SOFT_SLOPE | 6 |
| ADD_INTERCEPT | 6 |
| DROP_INTERCEPT | 6 |
| PACKET_ZONE_ID | 8 |
| EXTENSION | 1 |
| T_MULCHAN | 0 or 3 |
| BEGIN_PREAMBLE | 0 or 3 |
| RESUME_PREAMBLE | 0 or 3 |
| RESERVED | 0 - 7 (as needed) |

MSG_TYPE - Message type.

The base station shall set this field to '00000111'.

ACK_SEQ - Acknowledgment sequence number.

See 7.7.3.3.1.1.

MSG_SEQ - Message sequence number.

See 7.7.3.3.1.1.

ACK_REQ - Acknowledgment required indicator.

See 7.7.3.3.1.1.

ENCRYPTION - Message encryption indicator.

See 7.7.3.3.1.2.

SID - System identification.

The base station shall set this field to the system identification number for this cellular system (see 6.6.5.2).

NID - Network identification.

This field serves as a sub-identifier of a system as defined by the owner of the SID.

The base station shall set this field to the network identification number for this network (see 6.6.5.2).

SRCH_WIN_A - Search window size for the Active Set and Candidate Set.

The base station shall set this field to the window size parameter shown in Table 6.6.6.2.1-1 corresponding to the number of PN chips that the mobile station is to search for pilots in the Active Set and Candidate Set.

SRCH_WIN_N - Search window size for the Neighbor Set.

The base station shall set this field to the window size parameter shown in Table 6.6.6.2.1-1 corresponding to the number of PN chips that the mobile station is to search for pilots in the Neighbor Set.

SRCH_WIN_R - Search window size for the Remaining Set.

The base station shall set this field to the window size parameter shown in Table 6.6.6.2.1-1 corresponding to the number of PN chips that the mobile station is to search for pilots in the Remaining Set.

T_ADD - Pilot detection threshold.

This value is used by the mobile station to trigger the transfer of a pilot from the Neighbor Set or Remaining Set to the Candidate Set (see 6.6.6.2.6) and to trigger the sending of the *Pilot Strength Measurement Message* initiating the handoff process (see 6.6.6.2.5.2).

The base station shall set this field to the pilot detection threshold, expressed as an unsigned binary number equal to $\lfloor -2 \times 10 \times \log_{10} E_c/I_o \rfloor$.

T_DROP - Pilot drop threshold.

This value is used by the mobile station to start a handoff drop timer for pilots in the Active Set and the Candidate Set (see 6.6.6.2.3).

The base station shall set this field to the pilot drop threshold, expressed as an unsigned binary number equal to $\lfloor -2 \times 10 \times \log_{10} E_c/I_o \rfloor$.

T_COMP - Active Set versus Candidate Set comparison threshold.

The mobile station transmits a *Pilot Strength Measurement Message* when the strength of a pilot in the Candidate Set exceeds that of a pilot in the Active Set by this margin (see 6.6.6.2.5.2).

The base station shall set this field to the threshold Candidate Set pilot to Active Set pilot ratio, in units of 0.5 dB.

T_TDROP - Drop timer value.

Timer value after which an action is taken by the mobile station for a pilot that is a member of the Active Set or Candidate Set, and whose strength has not become greater than T_DROP. If the pilot is a member of the Active Set, a *Pilot Strength Measurement Message* is issued. If the pilot is a member of the Candidate Set, it will be moved to the Neighbor Set.

The base station shall set this field to the T_TDROP value shown in Table 6.6.6.2.3-1 corresponding to the drop timer value to be used by the mobile station.

NGHBR_MAX_AGE - Maximum age for retention of Neighbor Set members.

The mobile station drops neighbor set members whose AGE count exceeds this field.

The base station shall set this field to the Neighbor Set maximum age retention value (see 6.6.6.2.6.3).

P_REV - Protocol revision level.

The base station shall set this field to the base station protocol revision level.

SOFT_SLOPE - The slope in the inequality criterion for adding a pilot to the active set, or dropping a pilot from the active set (see 6.6.6.2.3 and 6.6.6.2.5.2).

The base station shall set this field as an unsigned binary number.

ADD_INTERCEPT - The intercept in the inequality criterion for adding a pilot to the active set (see 6.6.6.2.5.2).

The base station shall set this field as a signed binary number, in units of dB.

DROP_INTERCEPT - The intercept in the inequality criterion for dropping (see 6.6.6.2.3).

The base station shall set this field as a signed binary number, in units of dB.

PACKET_ZONE_ID - Packet data services zone identifier.

If the base station supports a packet data service zone, the base station shall set this field to its non-zero packet data services zone identifier.

If the base station does not support a packet data service zone, the base station shall set this field to '00000000'.

EXTENSION - Indicator that extension fields are present.

If Reverse Supplemental Code Channel system parameters are included in this message, the base station shall set this field to '1'; otherwise, the base station shall set this field to '0'.

T_MULCHAN - *Supplemental Channel Request Message* pilot strength reporting offset.

If EXTENSION is set to '1', the base station shall include this field and set this field to the threshold offset that the mobile station is to use when reporting neighbor pilot strength measurements in a *Supplemental Channel Request Message*. The mobile station is to interpret this field as an offset to T_ADD ranging from 0.5 dB (corresponding to T_MULCHAN = '000') to 4.0 dB (corresponding to T_MULCHAN = '111') in 0.5 dB increments.

BEGIN_PREAMBLE - Number of preamble frames on Reverse Supplemental Code Channels at the beginning of transmission on Reverse Supplemental Code Channel.

If EXTENSION is set to '1', the base station shall include this field and set this field to the number of Reverse Supplemental Code Channel preamble frames that the mobile station is to send when beginning transmission on Reverse Supplemental Code Channels.

RESUME_PREAMBLE - Number of preamble frames on Reverse Supplemental Code Channels at the resumption of transmission.

If EXTENSION is set to '1', the base station shall include this field and set this field to the number of Reverse Supplemental Code Channel preamble frames that the mobile station is to send when resuming transmission on a Reverse Supplemental Code Channel following an autonomous suspension of transmission on an allocated Supplemental Code Channel.

RESERVED - Reserved bits.

The base station shall set this field to '0000' add reserved bits as needed in order to make the length of the entire message equal to an integer number of octets. The base station shall set these bits to '0'.

7.7.3.3.2.8 Neighbor List Update Message

When the base station sends a *Neighbor List Update Message*, it shall use the following variable-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00001000') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| ENCRYPTION | 2 |
| PILOT_INC | 4 |
| One to 20 occurrences of the following field: | |
| NGHBR_PN | 9 |
| RESERVED | 0 - 7 (as needed) |

MSG_TYPE - Message type.

The base station shall set this field to '00001000'.

ACK_SEQ - Acknowledgment sequence number.

See 7.7.3.3.1.1.

MSG_SEQ - Message sequence number.

See 7.7.3.3.1.1.

ACK_REQ - Acknowledgment required indicator.

See 7.7.3.3.1.1.

ENCRYPTION - Message encryption indicator.

See 7.7.3.3.1.2.

PILOT_INC - Pilot PN sequence offset index increment.

The mobile station searches for Remaining Set pilots at pilot PN sequence offset index values that are multiples of this value.

The base station shall set this field to the pilot PN sequence increment, in units of 64 PN chips, that the mobile station is to use for searching the Remaining Set. The base station should set this field to the largest increment such that the pilot PN sequence offsets of all its neighbor base stations are integer multiples of that increment.

| | | |
|---|---|---|
| NGHBR_PN | - | Neighbor pilot PN sequence offset index.<br>The base station shall include one occurrence of this field for each pilot in its neighbor list. The base station shall set this field to the pilot's PN sequence offset, in units of 64 PN chips. The base station shall include no more than 20 occurrences of this field. |
| RESERVED | - | Reserved bits.<br>The base station shall add reserved bits as needed in order to make the length of the entire message equal to an integer number of octets. The base station shall set these bits to '0'. |

7.7.3.3.2.9 Send Burst DTMF Message

When the base station sends a *Send Burst DTMF Message*, it shall use the following variable-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00001001') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| ENCRYPTION | 2 |
| NUM_DIGITS | 8 |
| DTMF_ON_LENGTH | 3 |
| DTMF_OFF_LENGTH | 3 |
| NUM_DIGITS occurrences of the following field: | |
| DIGITi | 4 |
| RESERVED | 0 - 7 (as needed) |

MSG_TYPE - Message type.

The base station shall set this field to '00001001'.

ACK_SEQ - Acknowledgment sequence number.

See 7.7.3.3.1.1.

MSG_SEQ - Message sequence number.

See 7.7.3.3.1.1.

ACK_REQ - Acknowledgment required indicator.

See 7.7.3.3.1.1.

ENCRYPTION - Message encryption indicator

See 7.7.3.3.1.2.

NUM_DIGITS - Number of DTMF digits.

The base station shall set this field to the number of DTMF digits included in this message.

DTMF_ON_LENGTH - DTMF pulse width code.

The base station shall set this field to the DTMF_ON_LENGTH value shown in Table 6.7.2.3.2.7-1 corresponding to the requested pulse width of the DTMF pulse to be generated by the mobile station.

DTMF_OFF_LENGTH - DTMF interdigit interval code.

The base station shall set this field to the DTMF_OFF_LENGTH value shown in Table 6.7.2.3.2.7-2 corresponding to the requested minimum interdigit interval between DTMF pulses to be generated by the mobile station.

DIGITi - DTMF digit.

The base station shall include one occurrence of this field for each DTMF digit to be generated by the mobile station. The base station shall set each occurrence of this field to the code value shown in Table 6.7.1.3.2.4-4 corresponding to the dialed digit.

RESERVED - Reserved bits.

The base station shall add reserved bits as needed in order to make the length of the entire message equal to an integer number of octets. The base station shall set these bits to '0'.

#### 7.7.3.3.2.10 Power Control Parameters Message

When the base station sends a *Power Control Parameters Message*, it shall use the following fixed-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00001010') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| ENCRYPTION | 2 |
| PWR_REP_THRESH | 5 |
| PWR_REP_FRAMES | 4 |
| PWR_THRESH_ENABLE | 1 |
| PWR_PERIOD_ENABLE | 1 |
| PWR_REP_DELAY | 5 |
| RESERVED | 7 |

MSG_TYPE - Message type.

The base station shall set this field to '00001010'.

ACK_SEQ - Acknowledgment sequence number.

See 7.7.3.3.1.1.

MSG_SEQ - Message sequence number.

See 7.7.3.3.1.1.

ACK_REQ - Acknowledgment required indicator.

See 7.7.3.3.1.1.

ENCRYPTION - Message encryption indicator.

See 7.7.3.3.1.2.

PWR_REP_THRESH - Power control reporting threshold.

The base station shall set this field to the number of bad frames (see 6.2.2.2) to be received in a measurement period on the Forward Fundamental Code Channel before the mobile station is to generate a *Power Measurement Report Message* (see 6.6.4.1.1). If the base station sets PWR_THRESH_ENABLE to '1', it shall not set this field to '00000'.

| | | |
|---|---|---|
| PWR_REP_FRAMES | - | Power control reporting frame count.<br>The base station shall set this field to the value such that the number given by<br>$\lfloor 2^{(PWR\_REP\_FRAMES/2)} \times 5 \rfloor$ frames<br>is the number of frames over which the mobile station is to count frame errors. |
| PWR_THRESH-_ENABLE | - | Threshold report mode indicator.<br>If the mobile station is to generate threshold *Power Measurement Report Messages*, the base station shall set this field to '1'. If the mobile station is not to generate threshold *Power Measurement Report Messages*, the base station shall set this field to '0'. |
| PWR_PERIOD-_ENABLE | - | Periodic report mode indicator.<br>If the mobile station is to generate periodic *Power Measurement Report Messages*, the base station shall set this field to '1'. If the mobile station is not to generate periodic *Power Measurement Report Messages*, the base station shall set this field to '0'. |
| PWR_REP_DELAY | - | Power report delay.<br>The period that the mobile station waits following a *Power Measurement Report Message* before restarting frame counting for power control purposes.<br>The base station shall set this field to the power report delay value, in units of 4 frames (see 6.6.4.1.1). |
| RESERVED | - | Reserved bits.<br>The base station shall set this field to '0000000'. |

7.7.3.3.2.11 Retrieve Parameters Message

When the base station sends a *Retrieve Parameters Message*, it shall use the following variable-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00001011') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| ENCRYPTION | 2 |
| One or more occurrences of the following field: | |
| PARAMETER_ID | 16 |
| | |
| RESERVED | 7 |

MSG_TYPE - Message type.

The base station shall set this field to '00001011'.

ACK_SEQ - Acknowledgment sequence number.

See 7.7.3.3.1.1.

MSG_SEQ - Message sequence number.

See 7.7.3.3.1.1.

ACK_REQ - Acknowledgment required indicator.

See 7.7.3.3.1.1.

ENCRYPTION - Message encryption indicator.

See 7.7.3.3.1.2.

PARAMETER_ID - Parameter identification.

The base station can request the mobile station to report any parameter specified in Table E-1.

The base station shall include one occurrence of this field for each parameter requested. The base station shall set this field to the parameter identification number specified in Table E-1 corresponding to the parameter requested.

RESERVED - Reserved bits.

The base station shall set this field to '0000000'.

7.7.3.3.2.12 Set Parameters Message

When the base station sends a *Set Parameters Message*, it shall use the following variable-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00001100') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| ENCRYPTION | 2 |
| One or more occurrences of the following record: | |
| PARAMETER_ID | 16 |
| PARAMETER_LEN | 10 |
| PARAMETER | PARAMETER_LEN + 1 |
| | |
| RESERVED | 0 - 7 (as needed) |

MSG_TYPE - Message type.

The base station shall set this field to '00001100'.

ACK_SEQ - Acknowledgment sequence number.

See 7.7.3.3.1.1.

MSG_SEQ - Message sequence number.

See 7.7.3.3.1.1.

ACK_REQ - Acknowledgment required indicator.

See 7.7.3.3.1.1.

ENCRYPTION - Message encryption indicator.

See 7.7.3.3.1.2.

The base station shall include one occurrence of the following three-field record for each parameter to be set.

PARAMETER_ID - Parameter identification.

The base station shall set this field to the identification shown in Table E-1 corresponding to the settable parameter to be set.

PARAMETER_LEN - Parameter length.

The base station shall set this field to the length shown in Table E-1 corresponding to the parameter to be set.

PARAMETER - Parameter value.

The base station shall set this field to the value of the parameter specified by the PARAMETER_ID field.

RESERVED - Reserved bits.

The base station shall add reserved bits as needed in order to make the length of the entire message equal to an integer number of octets. The base station shall set these bits to '0'.

7.7.3.3.2.13 SSD Update Message

When the base station sends an *SSD Update Message* on the Forward Traffic Channel, it shall use the following fixed-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00001101') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| ENCRYPTION | 2 |
| RANDSSD | 56 |
| RESERVED | 7 |

MSG_TYPE - Message type. The base station shall set this field to '00001101'.

ACK_SEQ - Acknowledgment sequence number.
See 7.7.3.3.1.1.

MSG_SEQ - Message sequence number.
See 7.7.3.3.1.1.

ACK_REQ - Acknowledgment required indicator.
See 7.7.3.3.1.1.

ENCRYPTION - Message encryption indicator.
See 7.7.3.3.1.2.

RANDSSD - Random data.
The base station shall set this field as specified in 6.3.12.1.9.

RESERVED - Reserved bits.
The base station shall set this field to '0000000'.

7.7.3.3.2.14 Flash With Information Message

When the base station sends a *Flash With Information Message*, it shall use the following variable-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00001110') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| ENCRYPTION | 2 |
| One or more occurrences of the following record: | |
| RECORD_TYPE | 8 |
| RECORD_LEN | 8 |
| Type-specific fields | 8 × RECORD_LEN |
| RESERVED | 7 |

MSG_TYPE - Message type.

The base station shall set this field to '00001110'.

ACK_SEQ - Acknowledgment sequence number.

See 7.7.3.3.1.1.

MSG_SEQ - Message sequence number.

See 7.7.3.3.1.1.

ACK_REQ - Acknowledgment required indicator.

See 7.7.3.3.1.1.

ENCRYPTION - Message encryption indicator.

See 7.7.3.3.1.2.

The base station shall include occurrences of the following three-field record as specified in 7.7.5.

RECORD_TYPE - Information record type.

The base station shall set this field as specified in 7.7.5.

RECORD_LEN - Information record length.

The base station shall set this field to the number of octets in the type-specific fields included in this record.

| | | |
|---|---|---|
| Type-specific fields | - | Type-specific fields.<br>The base station shall include type-specific fields as specified in 7.7.5. |
| RESERVED | - | Reserved bits.<br>The base station shall set this field to '0000000'. |

7.7.3.3.2.15 Mobile Station Registered Message

When the base station sends a *Mobile Station Registered Message*, it shall use the following fixed-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00001111') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| ENCRYPTION | 2 |
| SID | 15 |
| NID | 16 |
| REG_ZONE | 12 |
| TOTAL_ZONES | 3 |
| ZONE_TIMER | 3 |
| MULT_SIDS | 1 |
| MULT_NIDS | 1 |
| BASE_LAT | 22 |
| BASE_LONG | 23 |
| REG_DIST | 11 |
| RESERVED | 4 |

MSG_TYPE - Message type.

The base station shall set this field to '00001111'.

ACK_SEQ - Acknowledgment sequence number.

See 7.7.3.3.1.1.

MSG_SEQ - Message sequence number.

See 7.7.3.3.1.1.

ACK_REQ - Acknowledgment required indicator.

See 7.7.3.3.1.1.

ENCRYPTION - Message encryption indicator.

See 7.7.3.3.1.2.

SID - System identification.

The base station shall set this field to the system identification number for this system.

NID - Network identification.

This field serves as a sub-identifier of a system as defined by the owner of the SID.

The base station shall set this field to the network identification number for this network. The NID value of 65,535 is reserved.

REG_ZONE - Registration zone.

The base station shall set this field to its registration zone number (see 6.6.5.1.5).

TOTAL_ZONES - Number of registration zones to be retained.

The base station shall set this field to the number of registration zones the mobile station is to retain for purposes of zone-based registration (see 6.6.5.1.5).

If zone-based registration is to be disabled, the base station shall set this field to '000'.

ZONE_TIMER - Zone timer length.

The base station shall set this field to the ZONE_TIMER value shown in Table 7.7.2.3.2.1-1 corresponding to the length of the zone registration timer to be used by mobile stations.

MULT_SIDS - Multiple SID storage indicator.

If mobile stations may store entries of SID_NID_LIST containing different SIDs, the base station shall set this field to '1'; otherwise the base station shall set this field to '0'.

MULT_NIDS - Multiple NID storage indicator.

If mobile stations may store multiple entries of SID_NID_LIST having the same SID (with different NIDs), the base station shall set this field to '1'; otherwise the base station shall set this field to '0'.

BASE_LAT - Base station latitude.

The base station shall set this field to its latitude in units of 0.25 second, expressed as a two's complement signed number with positive numbers signifying North latitudes. The base station shall set this field to a value in the range -1296000 to 1296000 inclusive (corresponding to a range of -90° to +90°).

BASE_LONG - Base station longitude.

The base station shall set this field to its longitude in units of 0.25 second, expressed as a two's complement signed number with positive numbers signifying East longitude. The base station shall set this field to a value in the range -2592000 to 2592000 inclusive (corresponding to a range of -180° to +180°).

REG_DIST - Registration distance.

If mobile stations are to perform distance-based registration, the base station shall set this field to the non-zero "distance" beyond which the mobile station is to re-register (see 6.6.5.1.4). If mobile stations are not to perform distance-based registration, the base station shall set this field to 0.

RESERVED - Reserved bits.

The base station shall set this field to '0000'.

#### 7.7.3.3.2.16 Status Request Message

When the base station sends a *Status Request Message*, it shall use the following variable-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00010000') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| ENCRYPTION | 2 |
| QUAL_INFO_TYPE | 8 |
| QUAL_INFO_LEN | 3 |
| Type-specific fields | 8 × QUAL_INFO_LEN |
| NUM_FIELDS | 4 |
| NUM_FIELDS occurrences of the following field: | |
| RECORD_TYPE | 8 |

MSG_TYPE - Message type.

The base station shall set this field to '00010000'.

ACK_SEQ - Acknowledgment sequence number.

See 7.7.3.3.1.1.

MSG_SEQ - Message sequence number.

See 7.7.3.3.1.1.

ACK_REQ - Acknowledgment required indicator.

See 7.7.3.3.1.1.

ENCRYPTION - Message encryption indicator.

See 7.7.3.3.1.2.

QUAL_INFO_TYPE - Qualification information type.

The base station shall set this field to the value shown in Table 7.7.2.3.2.15-1 to show the inclusion of qualification information in the type-specific fields.

QUAL_INFO_LEN - Qualification information length.

The base station shall set this field to the number of octets included in the type-specific fields of the qualification information.

Type-specific fields - Type-specific fields.

The base station shall set these fields to the qualification information according to the QUAL_INFO_TYPE field.

If QUAL_INFO_TYPE is equal to '00000000', the type-specific fields are omitted.

If QUAL_INFO_TYPE is equal to '00000001', the base station shall use the following fixed-length format for the type-specific fields:

| Type-specific Field | Length (bits) |
|---|---|
| BAND_CLASS | 5 |
| RESERVED | 3 |

If QUAL_INFO_TYPE is equal to '00000010', the base station shall use the following fixed-length format for the type-specific fields:

| Type-specific Field | Length (bits) |
|---|---|
| BAND_CLASS | 5 |
| OP_MODE | 8 |
| RESERVED | 3 |

BAND_CLASS - Band class.

The base station shall set this field to the CDMA band class, as specified in TSB58-A.

OP_MODE - Operating mode.

The base station shall set this field as shown in Table 7.7.2.3.2.15-3 to specify the operating mode qualification information.

RESERVED - Reserved bits.

The base station shall set this field to '000'.

NUM_FIELDS - Number of requested record fields in this message.

The base station shall set this field to the number of occurrences of RECORD_TYPE in this message.

The base station shall only request the status information records qualified by the included qualification information in this message. The base station shall include one occurrence of the following field for each information record that is requested:

RECORD_TYPE - Information record type.

The base station shall set this field to the record type value shown in Table 7.7.2.3.2.15-2 corresponding to the information record requested.

7.7.3.3.2.17 Extended Handoff Direction Message

When the base station sends an *Extended Handoff Direction Message*, it shall use the following variable-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00010001') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| ENCRYPTION | 2 |
| USE_TIME | 1 |
| ACTION_TIME | 6 |
| HDM_SEQ | 2 |
| SEARCH_INCLUDED | 1 |
| SRCH_WIN_A | 0 or 4 |
| T_ADD | 0 or 6 |
| T_DROP | 0 or 6 |
| T_COMP | 0 or 4 |
| T_TDROP | 0 or 4 |
| HARD_INCLUDED | 1 |
| FRAME_OFFSET | 0 or 4 |
| PRIVATE_LCM | 0 or 1 |
| RESET_L2 | 0 or 1 |
| RESET_FPC | 0 or 1 |
| SERV_NEG_TYPE | 0 or 1 |
| ENCRYPT_MODE | 0 or 2 |
| NOM_PWR_EXT | 0 or 1 |
| NOM_PWR | 0 or 4 |
| NUM_PREAMBLE | 0 or 3 |
| BAND_CLASS | 0 or 5 |
| CDMA_FREQ | 0 or 11 |

(continues on next page)

| Field | Length (bits) |
|---|---|
| ADD_LENGTH | 3 |
| Additional fields | 8 × ADD_LENGTH |

One or more occurrences of the following record:

| | |
|---|---|
| PILOT_PN | 9 |
| PWR_COMB_IND | 1 |
| CODE_CHAN | 8 |

| | |
|---|---|
| RESERVED | 0 - 7 (as needed) |

MSG_TYPE - Message type.

The base station shall set this field to '00010001'.

ACK_SEQ - Acknowledgment sequence number.

See 7.7.3.3.1.1.

MSG_SEQ - Message sequence number.

See 7.7.3.3.1.1.

ACK_REQ - Acknowledgment required indicator.

See 7.7.3.3.1.1.

ENCRYPTION - Message encryption indicator.

See 7.7.3.3.1.2.

USE_TIME - Use action time indicator.

This field indicates whether an ACTION_TIME is specified in this message.

If an ACTION_TIME is specified in this message, the base station shall set this field to '1'; otherwise, the base station shall set this field to '0'.

ACTION_TIME - Action time.

If the USE_TIME field is set to '1', the base station shall set this field to the System Time, in units of 80 ms (modulo 64), at which the handoff is to take effect. If the USE_TIME field is set to '0' the base station shall set this field to '000000'.

HDM_SEQ - *Extended Handoff Direction Message* sequence number.

This field is used by the mobile station in the *Power Measurement Report Message* to identify the order in which the reported pilot strengths are sent.

The base station shall set this field as specified in 7.6.6.2.2.2.

SEARCH_INCLUDED - Pilot search parameters included.

If the mobile station is to change its pilot search parameters, the base station shall set this field to '1'; otherwise, the base station shall set this field to '0'.

SRCH_WIN_A - Search window size for the Active Set and Candidate Set.

If SEARCH_INCLUDED is set to '1', the base station shall include the field SRCH_WIN_A and set this field to the window size parameter shown in Table 6.6.6.2.1-1 corresponding to the number of PN chips that the mobile station is to search for pilots in the Active Set and Candidate Set; otherwise, the base station shall omit this field.

T_ADD - Pilot detection threshold.

This value is used by the mobile station to trigger the transfer of a pilot from the Neighbor Set or Remaining Set to the Candidate Set (see 6.6.6.2.6) and to trigger the sending of the *Pilot Strength Measurement Message* initiating the handoff process (see 6.6.6.2.5.2).

If SEARCH_INCLUDED is set to '1', the base station shall include the field T_ADD and set this field to the pilot detection threshold, expressed as an unsigned binary number equal to $\lfloor -2 \times 10 \times \log_{10} E_c/I_o \rfloor$; otherwise, the base station shall omit this field.

T_DROP - Pilot drop threshold.

This value is used by mobile stations to start a handoff drop timer for pilots in the Active Set and the Candidate Set (see 6.6.6.2.3).

If SEARCH_INCLUDED is set to '1', the base station shall include the field T_DROP and set this field to the pilot drop threshold, expressed as an unsigned binary number equal to $\lfloor -2 \times 10 \times \log_{10} E_c/I_o \rfloor$; otherwise, the base station shall omit this field.

T_COMP - Active Set versus Candidate Set comparison threshold.

The mobile station transmits a *Pilot Strength Measurement Message* when the strength of a pilot in the Candidate Set exceeds that of a pilot in the Active Set by this margin (see 6.6.6.2.5.2).

If SEARCH_INCLUDED is set to '1', the base station shall include the field T_COMP and set this field to the threshold Candidate Set pilot to Active Set pilot ratio, in units of 0.5 dB; otherwise, the base station shall omit this field.

T_TDROP - Drop timer value.

Timer value after which an action is taken by the mobile station for a pilot that is a member of the Active Set or Candidate Set, and whose strength has not become greater than T_DROP. If the pilot is a member of the Active Set, a *Pilot Strength Measurement Message* is issued. If the pilot is a member of the Candidate Set, it will be moved to the Neighbor Set.

If SEARCH_INCLUDED is set to '1', the base station shall include the field T_TDROP and set this field to the T_TDROP value shown in Table 6.6.6.2.3-1 corresponding to the drop timer value to be used by the mobile station. Otherwise, the base station shall omit this field.

HARD_INCLUDED - Hard handoff parameters included.

If the mobile station is to change FRAME_OFFSET, PRIVATE_LCM, ENCRYPT_MODE, NOM_PWR, BAND_CLASS, or CDMA_FREQ, or the mobile station is to perform a reset of the acknowledgment procedures, or the mobile station is to reset Forward Traffic Channel power control counters, the base station shall set this field to '1'; otherwise, the base station shall set this field to '0'.

FRAME_OFFSET - Frame offset.

The Forward and Reverse Traffic Channel frames are delayed FRAME_OFFSET × 1.25 ms relative to system timing (see 7.1.3.5.1).

If HARD_INCLUDED is set to '1', the base station shall include the field FRAME_OFFSET and set it to the Forward and Reverse Traffic Channel frame offset; otherwise, the base station shall omit this field.

PRIVATE_LCM - Private long code mask indicator.

This field is used to change the long code mask after a hard handoff.

If HARD_INCLUDED is set to '1', the base station shall include the field PRIVATE_LCM and set it as described below; otherwise, the base station shall omit this field.

If the private long code mask is to be used after the handoff, the base station shall set this field to '1'; otherwise, the base station shall set this field to '0'.

RESET_L2 - Reset acknowledgment procedures command.

This field is used to reset acknowledgment processing in the mobile station.

If HARD_INCLUDED is set to '1', the base station shall include the field RESET_L2 and set it as described below; otherwise, the base station shall omit this field.

If the field is included and the mobile station is to reset its acknowledgment procedures, the base station shall set this field to '1'; otherwise, the base station shall set this field to '0'.

RESET_FPC - Reset Forward Traffic Channel power control.

This field is used to reset the Forward Traffic Channel power control counters.

If HARD_INCLUDED is set to '1', the base station shall include the field RESET_FPC and set it as described below; otherwise, the base station shall omit this field.

The base station shall set this field to '0' if the Forward Traffic Channel power control counters are to be maintained after completion of the handoff. If the counters are to be initialized as specified in 6.6.4.1.1.1, then the base station shall set this field to '1'.

SERV_NEG_TYPE - Service negotiation type.

If HARD_INCLUDED is set to '1', the base station shall include the field SERV_NEG_TYPE and set it as described below; otherwise, the base station shall omit this field.

If the mobile station is to use service negotiation, the base station shall set this field to '1'. If the mobile station is to use service option negotiation, the base station shall set this field to '0'.

ENCRYPT_MODE - Message encryption mode.

If HARD_INCLUDED is set to '1', the base station shall include the field ENCRYPT_MODE and set it to the ENCRYPT_MODE value shown in Table 7.7.2.3.2.8-2 corresponding to the encrypting mode that is to be used for messages sent on the Forward and Reverse Traffic Channels, as specified in 6.3.12.2; otherwise, the base station shall omit this field.

NOM_PWR_EXT - Extended nominal transmit power.

If HARD_INCLUDED is set to '1', the base station shall include this field and set it as described below; otherwise, the base station shall omit this field.

If this field is included, a Band Class 0 base station shall set this field to '0'.

If this field is included, a Band Class 1 base station shall set this field to '1' if the correction factor to be used by the mobile station in the open loop power estimate is between -24 dB and -9 dB inclusive; otherwise (the correction factor is in the range -8 dB to 7 dB inclusive), the base station shall set this field to '0'.

NOM_PWR - Nominal transmit power offset.

If HARD_INCLUDED is set to '1', the base station shall include the field NOM_PWR and set it to the correction factor to be used by the mobile station in the open loop power estimate, expressed as a two's complement value in units of 1 dB (see 6.1.2.3.1); otherwise, the base station shall omit this field.

NUM_PREAMBLE - Number of Traffic Channel preamble frames.

If HARD_INCLUDED is set to '1', the base station shall include the field NUM_PREAMBLE and set it to the number of Traffic Channel preamble frames that the mobile station is to send when performing a handoff; otherwise, the base station shall omit this field.

BAND_CLASS - Band class.

If HARD_INCLUDED is set to '1', the base station shall include the field BAND_CLASS and set it to the CDMA band class corresponding to the CDMA frequency assignment for the CDMA Channel as specified in TSB58-A; otherwise, the base station shall omit this field.

CDMA_FREQ - Frequency assignment.

If HARD_INCLUDED is set to '1', the base station shall include the field CDMA_FREQ and set it to the CDMA Channel number, in the specified CDMA band class, corresponding to the CDMA frequency assignment for the CDMA Channel as specified in 7.1.1.1; otherwise, the base station shall omit this field.

ADD_LENGTH - Number of octets in the additional fields.

The base station shall set this field to the number of octets included in the Additional fields. If Additional fields are not included in this message, the base station shall set this field to '000'.

Additional fields - Additional fields.

If the ADD_LENGTH field is not equal to '000', the base station shall include the following fields as additional fields.

| **Field** | **Length (bits)** |
|---|---|
| P_REV | 8 |

P_REV - Protocol revision level.

The base station shall set this field to the base station protocol revision level that the mobile station is to use after completion of the handoff.

The base station shall include one occurrence of the following three-field record for each member of the mobile station's new Active Set.

PILOT_PN - Pilot PN sequence offset index.

The base station shall set this field to the pilot PN sequence offset for this pilot in units of 64 PN chips.

PWR_COMB_IND - Power control symbol combining indicator.

If the Forward Traffic Channel associated with this pilot will carry the same closed-loop power control subchannel bits as that of the previous pilot in this message, the base station shall set this field to '1'. Otherwise, the base station shall set this field to '0'. For the first occurrence of this record in the message, the base station shall set this field to '0'.

CODE_CHAN - Code channel index.

The base station shall set this field to the code channel index (see 7.1.3.1.8) in the range 1 to 63 inclusive that the mobile station is to use as the Forward Fundamental Code Channel associated with this pilot.

RESERVED - Reserved bits.

The base station shall add reserved bits as needed in order to make the length of the entire message equal to an integer number of octets. The base station shall set these bits to '0'.

#### 7.7.3.3.2.18 Service Request Message

When the base station sends a *Service Request Message*, it shall use the following variable-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00010010') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| ENCRYPTION | 2 |
| SERV_REQ_SEQ | 3 |
| REQ_PURPOSE | 4 |
| Zero or one occurrence of the following record: | |
| RECORD_TYPE | 8 |
| RECORD_LEN | 8 |
| Type-specific fields | 8 × RECORD_LEN |

MSG_TYPE - Message type.

The base station shall set this field to '00010010'.

ACK_SEQ - Acknowledgment sequence number.

See 7.7.3.3.1.1.

MSG_SEQ - Message sequence number.

See 7.7.3.3.1.1.

ACK_REQ - Acknowledgment required indicator.

See 7.7.3.3.1.1.

ENCRYPTION - Message encryption indicator.

See 7.7.3.3.1.2.

SERV_REQ_SEQ - Service request sequence number.

The base station shall set this field to the service request sequence number pertaining to this request message as specified in 7.6.4.1.2.1.1.

REQ_PURPOSE - Request purpose.

The base station shall set this field to the appropriate REQ_PURPOSE code from Table 7.7.3.3.2.18-1 to indicate the purpose of the message.

**Table 7.7.3.3.2.18-1. REQ_PURPOSE Codes**

| REQ_PURPOSE (binary) | Meaning |
|---|---|
| 0001 | Indicates that the purpose of this message is to reject a proposed service configuration. |
| 0010 | Indicates that the purpose of this message is to propose a service configuration. |
| All other REQ_PURPOSE codes are reserved. | |

If the REQ_PURPOSE code is set to '0010', the base station shall include one occurrence of the following three-field record to specify the proposed service configuration; otherwise, the base station shall not include the following record.

RECORD_TYPE - Information record type.

The base station shall set this field to the record type value shown in Table 7.7.5-1 corresponding to the Service Configuration information record.

RECORD_LEN - Information record length.

The base station shall set this field to the number of octets included in the type-specific fields of the Service Configuration information record.

Type-specific fields - Type-specific fields.

The base station shall set these fields as specified in 7.7.5.7 for the Service Configuration information record.

#### 7.7.3.3.2.19 Service Response Message

When the base station sends a *Service Response Message*, it shall use the following variable-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00010011') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| ENCRYPTION | 2 |
| SERV_REQ_SEQ | 3 |
| RESP_PURPOSE | 4 |
| Zero or one occurrence of the following record: | |
| RECORD_TYPE | 8 |
| RECORD_LEN | 8 |
| Type-specific fields | 8 × RECORD_LEN |

MSG_TYPE - Message type.

The base station shall set this field to '00010011'.

ACK_SEQ - Acknowledgment sequence number.

See 7.7.3.3.1.1.

MSG_SEQ - Message sequence number.

See 7.7.3.3.1.1.

ACK_REQ - Acknowledgment required indicator.

See 7.7.3.3.1.1.

ENCRYPTION - Message encryption indicator.

See 7.7.3.3.1.2.

SERV_REQ_SEQ - Service request sequence number.

The base station shall set this field to the value of the SERV_REQ_SEQ field in the *Service Request Message* to which it is responding.

RESP_PURPOSE - Response purpose.

The base station shall set this field to the appropriate RESP_PURPOSE code from Table 7.7.3.3.2.19-1 to indicate the purpose of the message.

**Table 7.7.3.3.2.19-1. RESP_PURPOSE Codes**

| RESP_PURPOSE (binary) | Meaning |
|---|---|
| 0001 | Indicates that the purpose of the message is to reject a proposed service configuration. |
| 0010 | Indicates that the purpose of the message is to propose a service configuration. |
| All other RESP_PURPOSE codes are reserved. | |

If the RESP_PURPOSE code is set to '0010', the base station shall include one occurrence of the following three-field record to specify the proposed service configuration; otherwise, the base station shall not include the following record.

RECORD_TYPE - Information record type.

The base station shall set this field to the record type value shown in Table 7.7.5-1 corresponding to the Service Configuration information record.

RECORD_LEN - Information record length.

The base station shall set this field to the number of octets included in the type-specific fields of the Service Configuration information record.

Type-specific fields - Type-specific fields.

The base station shall set these fields as specified in 7.7.5.7 for the Service Configuration information record.

#### 7.7.3.3.2.20 Service Connect Message

When the base station sends a *Service Connect Message*, it shall use the following variable-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00010100') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| ENCRYPTION | 2 |
| USE_TIME | 1 |
| ACTION_TIME | 6 |
| SERV_CON_SEQ | 3 |
| RESERVED | 5 |
| One occurrence of the following record: | |
| RECORD_TYPE | 8 |
| RECORD_LEN | 8 |
| Type-specific fields | 8 × RECORD_LEN |

MSG_TYPE - Message type.

The base station shall set this field to '00010100'.

ACK_SEQ - Acknowledgment sequence number.

See 7.7.3.3.1.1.

MSG_SEQ - Message sequence number.

See 7.7.3.3.1.1.

ACK_REQ - Acknowledgment required indicator.

See 7.7.3.3.1.1.

ENCRYPTION - Message encryption indicator.

See 7.7.3.3.1.2.

USE_TIME - Use action time indicator.

This field indicates whether an ACTION_TIME is specified in this message.

If an ACTION_TIME is specified in this message, the base station shall set this field to '1'; otherwise, the base station shall set this field to '0'.

ACTION_TIME - Action time.

If the USE_TIME field is set to '1', the base station shall set this field to the System Time, in units of 80 ms (modulo 64), at which the specified service configuration is to take effect. If the USE_TIME field is set to '0' the base station shall set this field to '000000'.

SERV_CON_SEQ - Connect sequence number.

The base station shall set this field to the connect sequence number pertaining to this connect message as specified in 7.6.4.1.2.1.2.

RESERVED - Reserved bits.

The base station shall set this field to '00000'.

The base station shall include one occurrence of the following three-field record to specify the service configuration.

RECORD_TYPE - Information record type.

The base station shall set this field to the record type value shown in Table 7.7.5-1 corresponding to the Service Configuration information record.

RECORD_LEN - Information record length.

The base station shall set this field to the number of octets included in the type-specific fields of the Service Configuration information record.

Type-specific fields - Type-specific fields.

The base station shall set these fields as specified in 7.7.5.7 for the Service Configuration information record.

7.7.3.3.2.21 Service Option Control Message

When the base station sends a *Service Option Control Message*, it shall use the following variable-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00010101') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| ENCRYPTION | 2 |
| USE_TIME | 1 |
| ACTION_TIME | 6 |
| CON_REF | 8 |
| SERVICE_OPTION | 16 |
| CTL_REC_LEN | 8 |
| Type-specific fields | 8 × CTL_REC_LEN |

MSG_TYPE - Message type.

The base station shall set this field to '00010101'.

ACK_SEQ - Acknowledgment sequence number.

See 7.7.3.3.1.1.

MSG_SEQ - Message sequence number.

See 7.7.3.3.1.1.

ACK_REQ - Acknowledgment required indicator.

See 7.7.3.3.1.1.

ENCRYPTION - Message encryption indicator.

See 7.7.3.3.1.2.

USE_TIME - Use action time indicator.

This field indicates whether an ACTION_TIME is specified in this message.

If an ACTION_TIME is specified in this message, the base station shall set this field to '1'; otherwise, the base station shall set this field to '0'.

ACTION_TIME - Action time.

If the USE_TIME field is set to '1', the base station shall set this field to the System Time, in units of 80 ms (modulo 64), at which this *Service Option Control Message* is to take effect. If the USE_TIME field is set to '0' the base station shall set this field to '000000'.

CON_REF - Service option connection reference.

The base station shall set this field to the reference for the service option connection.

SERVICE_OPTION - Service option.

The base station shall set this field to the service option in use with the service option connection.

CTL_REC_LEN - Service option control record length.

The base station shall set this field to the number of octets included in the type-specific fields of this service option control record.

Type-specific fields - Type-specific fields.

The base station shall set these fields as specified by the requirements for the service option, which are defined external to this specification. See relevant service option specification.

### 7.7.3.3.2.22 TMSI Assignment Message

When the base station sends a *TMSI Assignment Message*, it shall use the following variable-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00010110') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| ENCRYPTION | 2 |
| TMSI_ZONE_LEN | 4 |
| TMSI_ZONE | 8 × TMSI_ZONE_LEN |
| TMSI_CODE | 32 |
| TMSI_EXP_TIME | 24 |
| RESERVED | 3 |

MSG_TYPE - Message type.

The base station shall set this field to '00010110'.

ACK_SEQ - Acknowledgment sequence number.

See 7.7.3.3.1.1.

MSG_SEQ - Message sequence number.

See 7.7.3.3.1.1.

ACK_REQ - Acknowledgment required indicator.

See 7.7.3.3.1.1.

ENCRYPTION - Message encryption indicator.

See 7.7.3.3.1.2.

TMSI_ZONE_LEN - TMSI zone length.

The base station shall set this field to the number of octets included in the TMSI_ZONE. The base station shall set this field to a value in the range 1 to 8 inclusive.

TMSI_ZONE - TMSI zone.

The base station shall set this field to the TMSI zone number, as specified in TIA/EIA/IS-735.

TMSI_CODE - Temporary mobile station identity code.

The base station shall set this field to the 32-bit TMSI code assigned to the mobile station.

If the base station is to deassign the TMSI, the base station shall set all the bits in this field to '1'.

TMSI_EXP_TIME - TMSI expiration time.

The base station shall set this field to the System Time in the units of 80 ms × $2^{12}$ when the TMSI is to expire.

RESERVED - Reserved bits.

The base station shall set this field to '000'.

### 7.7.3.3.2.23 Service Redirection Message

When the base station sends a *Service Redirection Message* on the Forward Traffic Channel, it shall use the following variable-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00010111') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| ENCRYPTION | 2 |
| RETURN_IF_FAIL | 1 |
| DELETE_TMSI | 1 |
| REDIRECT_TYPE | 1 |
| One occurrence of the following record: | |
| RECORD_TYPE | 8 |
| RECORD_LEN | 8 |
| Type-specific fields | 8 × RECORD_LEN |
| | |
| RESERVED | 4 |

MSG_TYPE - Message type.

The base station shall set this field to '00010111'.

ACK_SEQ - Acknowledgment sequence number.

The base station shall set this field to the MSG_SEQ field from the most recently received Access Channel message requiring an acknowledgment from the mobile station addressed by this message (see 7.6.3.1.1).

MSG_SEQ - Message sequence number.

The base station shall set this field to the acknowledgment sequence number for this message (see 7.6.2.1.4).

ACK_REQ - Acknowledgment required indicator.

If the mobile station is to acknowledge this message, the base station shall set this field to '1'. If the mobile station is not to acknowledge this message, the base station shall set this field to '0' (see 7.6.3.1.1).

ENCRYPTION - Message encryption indicator.

See 7.7.3.3.1.2.

RETURN_IF_FAIL - Return if fail indicator.

The base station shall set this field to '1' if the mobile station is required to return to the system from which it is being redirected upon failure to obtain service using the redirection criteria specified in this message; otherwise, the base station shall set this field to '0'.

DELETE_TMSI - Delete TMSI indicator.

The base station shall set this field to '1' if the mobile station is required to delete the TMSI assigned to the mobile station; otherwise, the base station shall set this field to '0'.

REDIRECT_TYPE - Redirect indicator.

The base station shall set this field to the REDIRECT_TYPE value shown in table 7.7.2.3.2.16-1 corresponding to the redirection type.

The base station shall include one occurrence of the following record:

RECORD_TYPE - Redirection record type.

The base station shall set this field to the RECORD_TYPE value shown in Table 7.7.2.3.2.16-2 corresponding to the type of redirection specified by this record.

RECORD_LEN - Redirection record length.

If RECORD_TYPE equals to '00000000', the base station shall set this field to '00000000'; otherwise, the base station shall set this field to the number of octets in the type-specific fields of this redirection record.

Type-specific fields - Redirection record type-specific fields.

The base station shall include type-specific fields based on the RECORD_TYPE of this redirection record.

If RECORD_TYPE is equal to '00000000', the base station shall not include the type-specific fields.

If RECORD_TYPE is equal to '00000001', the base station shall include the following fields:

| Field | Length (bits) |
|---|---|
| EXPECTED_SID | 15 |
| IGNORE_CDMA | 1 |
| SYS_ORDERING | 3 |
| RESERVED | 5 |

EXPECTED_SID - Expected SID.

If the base station is redirecting the mobile station to a specific system, the base station shall set this field to the SID of that system; otherwise, the base station shall set this field to 0.

IGNORE_CDMA - Ignore CDMA Available indicator.

The base station shall set this field to '1' to indicate that the mobile station is to ignore the *CDMA Capability Message* on the analog system to which it is being redirected. The base station shall set this field to '0' to indicate that the mobile station may discontinue service on the system to which it is being redirected if the mobile station receives a *CDMA Capability Message* with CDMA_AVAIL equal to '1', and the preferred mode of the mobile station is CDMA.

SYS_ORDERING - System ordering.

The base station shall set this field to the SYS_ORDERING value shown in Table 7.7.2.3.2.16-3 corresponding to the order in which the mobile station is to attempt to obtain service on an analog system.

RESERVED - Reserved bits.

The base station shall set this field to '00000'.

If RECORD_TYPE is equal to '00000010', the base station shall include the following fields:

| Subfield | Length (bits) |
|---|---|
| BAND_CLASS | 5 |
| EXPECTED_SID | 15 |
| EXPECTED_NID | 16 |
| RESERVED | 4 |
| NUM_CHANS | 4 |
| NUM_CHANS occurrences of the following field: | |
| CDMA_CHAN | 11 |
| RESERVED | 0-7 (as needed) |

BAND_CLASS - Band class.

The base station shall set this field to the CDMA band class, as specified in TSB58-A.

EXPECTED_SID - Expected SID.

| | | |
|---|---|---|
| | | If the base station is redirecting the mobile station to a specific system, the base station shall set this field to the SID of that system; otherwise, the base station shall set this field to 0. |
| EXPECTED_NID | - | Expected NID. |
| | | If the base station is redirecting the mobile station to a specific network, the base station shall set this field to the NID of that network; otherwise, the base station shall set this field to 65535. |
| RESERVED | - | Reserved bits. |
| | | The base station shall set this field to '0000'. |
| NUM_CHANS | - | Number of CDMA Channels. |
| | | The base station shall set this field to the number of occurrences of the CDMA_CHAN field in this record. |
| CDMA_CHAN | - | CDMA Channel number. |
| | | For each CDMA Channel on which the mobile station is to attempt to acquire a CDMA system, the base station shall include one occurrence of this field specifying the associated CDMA Channel number. |
| RESERVED | - | Reserved bits. |
| | | The base station shall add reserved bits as needed in order to make the length of the record equal to an integer number of octets. The base station shall set these bits to '0'. |

7.7.3.3.2.24 Supplemental Channel Assignment Message

When the base station sends a *Supplemental Channel Assignment Message*, it shall use the following variable-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00011000') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| ENCRYPTION | 2 |
| USE_RETRY_DELAY | 1 |
| RETRY_DELAY | 0 or 8 |
| REV_INCLUDED | 1 |

Include the following record only if REV_INCLUDED is set to '1':

| | |
|---|---|
| REV_DTX_DURATION | 4 |
| EXPL_REV_START_TIME | 1 |
| REV_START_TIME | 0 or 6 |
| USE_REV_DURATION | 1 |
| REV_DURATION | 0 or 8 |
| USE_REV_HDM_SEQ | 1 |
| REV_LINKED_HDM_SEQ | 0 or 2 |
| NUM_REV_CODES | 3 |
| USE_T_ADD_ABORT | 1 |
| USE_SCRM_SEQ_NUM | 1 |
| SCRM_SEQ_NUM | 0 or 4 |
| REV_PARMS_INCLUDED | 1 |
| T_MULCHAN | 0 or 3 |
| BEGIN_PREAMBLE | 0 or 3 |
| RESUME_PREAMBLE | 0 or 3 |

| | |
|---|---|
| FOR_INCLUDED | 1 |

(continues on next page)

| Field | Length (bits) |
|---|---|
| Include the following record only if FOR_INCLUDED is set to '1': | |
| FOR_SUP_CONFIG | 2 |
| EXPL_FOR_START_TIME | 1 |
| FOR_START_TIME | 0 or 6 |
| USE_FOR_DURATION | 1 |
| FOR_DURATION | 0 or 8 |
| USE_FOR_HDM_SEQ | 1 |
| FOR_LINKED_HDM_SEQ | 0 or 2 |
| Include the following fields and records only if FOR_INCLUDED is set to '1' and FOR_SUP_CONFIG is set to '10' or '11': | |
| NUM_SUP_PILOTS | 3 |
| NUM_FOR_SUP | 3 |
| Include NUM_SUP_PILOTS occurrences of the following record only if FOR_INCLUDED is set to '1' and FOR_SUP_CONFIG is set to '10' or '11': | |
| PILOT_PN | 9 |
| EXPL_CODE_CHAN | 1 |
| If EXPL_CODE_CHAN is set to '1', for each PILOT_PN include NUM_FOR_SUP occurrences of the following field: | |
| SUP_CODE_CHAN | 0 or 8 |
| If EXPL_CODE_CHAN is set to '0', the following field is included: | |
| BASE_CODE_CHAN | 0 or 8 |
| RESERVED | 0 - 7 (as needed) |

MSG_TYPE - Message type.

The base station shall set this field to '00011000'.

ACK_SEQ - Acknowledgment sequence number.

See 7.7.3.3.1.1.

MSG_SEQ - Message sequence number.

See 7.7.3.3.1.1.

ACK_REQ - Acknowledgment required indicator.

See 7.7.3.3.1.1.

ENCRYPTION - Message encryption indicator.

See 7.7.3.3.1.2.

USE_RETRY_DELAY - Assign or Retry Indicator.

The base station shall set this field to '1' to indicate that this message contains a retry delay time. Otherwise, the base station shall set this field to '0' to indicate that no RETRY_DELAY has been included.

RETRY_DELAY - *Supplemental Channel Request Message* retry delay.

If USE_RETRY_DELAY is set to '1', the base station shall include and set this field to the duration of the delay interval in units of 320 ms (4 frames) from the next 80 ms system time boundary during which the mobile station is not permitted to send a *Supplemental Channel Request Message*. The base station shall set RETRY_DELAY to '11111111' to indicate that the mobile station is to refrain from sending *Supplemental Channel Request Messages* indefinitely.

REV_INCLUDED - Reverse Supplemental Code Channel configuration indicator.

The base station shall set this field to '1' to indicate that this message contains assignment information for Reverse Supplemental Code Channels; otherwise, the base station shall set this field to '0'.

If REV_INCLUDED is set to '1', then the base station shall include the following fields, otherwise the base station shall omit the following fields:

REV_DTX_DURATION - Reverse Discontinuous Transmission Duration.

The base station shall set this field to the maximum duration of time in units of 20 ms that the mobile station is allowed to stop transmission on a Reverse Supplemental Code Channel within the reverse assignment duration. The base station shall set this field to '0000' if the mobile station is to stop using a Reverse Supplemental Code Channel once it has stopped transmitting on that Reverse Supplemental Channel. The base station shall set this field to '1111' if the mobile station is allowed to resume transmission on a Reverse Supplemental Code Channel at any time within the reverse assignment duration.

EXPL_REV_START_TIME - Explicit Reverse Supplemental Code Channel assignment start time indicator.

This field indicates whether a start time for the specified Reverse Supplemental Channel Assignment is specified in this message. If a REV_START_TIME is specified in this message, the base station shall set this field to '1'. Otherwise, the base station shall set this field to '0'. If EXPL_REV_START_TIME is set to '1', then the base station shall set USE_REV_HDM_SEQ to '0'.

REV_START_TIME - Explicit start time for Reverse Supplemental Code Channel assignment.

If EXPL_REV_START_TIME is included and set to '1', the base station shall include and set this field to the System Time, in units of 80 ms (modulo 64), at which the mobile station may start transmitting on the specified number of Reverse Supplemental Code Channels. If EXPL_REV_START_TIME is omitted or set to '0', the base station shall omit this field.

USE_REV_DURATION - Use reverse duration indicator.

The base station shall set this field to '1' if the REV_DURATION field is included in the message. Otherwise, the base station shall set this field to '0'. If the mobile station is granted permission to transmit on Reverse Supplemental Code Channels (i.e., NUM_REV_CODES is not '000') then a value of '0' for this field indicates an infinite Reverse Supplemental Code Channel assignment duration (i.e., the mobile station may transmit on Reverse Supplemental Code Channels until it receives a subsequent *Supplemental Channel Assignment Message* or a *General Handoff Direction Message* that specifies an updated REV_DURATION or an updated value of NUM_REV_CODES).

REV_DURATION - Duration of Reverse Supplemental Code Channel assignment.

The base station shall include this field only if the USE_REV_DURATION field is included and set to '1'. If included, this field indicates the allocated duration, in units of 80 ms, during which the mobile station may transmit on Reverse Supplemental Code Channels.

USE_REV_HDM_SEQ - Use Reverse *General Handoff Direction Message* sequence number indicator.

The base station shall set this field to '1' to indicate that this Reverse Supplemental Code Channel assignment shall take effect at the same time as a corresponding *General Handoff Direction Message*. Otherwise, the base station shall set this field to '0'. If USE_REV_HDM_SEQ is set to '1', then the base station shall set EXPL_REV_START_TIME to '0'.

REV_LINKED_HDM_SEQ - Sequence number of the reverse linked *General Handoff Direction Message*.

If USE_REV_HDM_SEQ is included and set to '1', then the base station shall set this field to the sequence number of the *General Handoff Direction Message* (HDM_SEQ) to which this Reverse Supplemental Code Channel assignment is linked.

NUM_REV_CODES - Number of Reverse Supplemental Code Channels.

The base station shall set this field to the number of Reverse Supplemental Code Channels which are assigned to the mobile station.

USE_T_ADD_ABORT - Reverse use T_ADD abort indicator.

The base station shall set this field to '1' to indicate that the mobile station is to utilize the T_ADD Reverse Supplemental Code Channel abort feature for this reverse assignment; otherwise, the base station shall set this field to '0'.

USE_SCRM_SEQ_NUM - Use *Supplemental Channel Request Message* sequence number indicator.

The base station shall set this field to '1' if the SCRM_SEQ_NUM field is included in this message; otherwise, the base station shall set this field to '0'.

SCRM_SEQ_NUM - *Supplemental Channel Request Message* sequence number.

If USE_SCRM_SEQ_NUM is set to '1', the base station shall set this field to the sequence number corresponding to the SCRM_SEQ_NUM field in a *Supplemental Channel Request Message* to which the mobile station is to match this message; otherwise, the base station shall omit this field.

REV_PARMS_INCLUDED - Reverse additional parameters included flag.

The base station shall set this field to '1' if the following three fields (T_MULCHAN, BEGIN_PREAMBLE, and RESUME_PREAMBLE) are included in this message; otherwise, the base station shall set this field to '0'.

T_MULCHAN - *Supplemental Channel Request Message* pilot strength reporting offset.

If REV_PARMS_INCLUDED is set to '1', the base station shall include this field and set this field to the threshold offset that the mobile station is to use when reporting neighbor pilot strength measurements in a *Supplemental Channel Request Message*. The mobile station is to interpret this field as an offset to T_ADD ranging from 0.5 dB (corresponding to T_MULCHAN = '000') to 4.0 dB (corresponding to T_MULCHAN = '111') in 0.5 dB increments.

BEGIN_PREAMBLE - Number of preamble frames on Reverse Supplemental Code Channels at the beginning of transmission on Reverse Supplemental Code Channel.

If REV_PARMS_INCLUDED is set to '1', the base station shall include this field and set this field to the number of Reverse Supplemental Code Channel preamble frames that the mobile station is to send when beginning transmission on Reverse Supplemental Code Channels.

RESUME_PREAMBLE - Number of preamble frames on Reverse Supplemental Code Channels at the resumption of transmission.

If REV_PARMS_INCLUDED is set to '1', the base station shall include this field and set this field to the number of Reverse Supplemental Code Channel preamble frames that the mobile station is to send when resuming transmission on a Reverse Supplemental Code Channel following an autonomous suspension of transmission on an allocated Supplemental Code Channel.

FOR_INCLUDED - Forward Supplemental Code Channel configuration indicator.

The base station shall set this field to '1' to indicate that this message contains assignment information for Forward Supplemental Code Channels; otherwise, the base station shall set this field to '0'.

If FOR_INCLUDED is set to '1', then the base station shall include the remaining fields in this message, otherwise the base station shall omit all of the following except for RESERVED.

FOR_SUP_CONFIG - Forward Supplemental Code Channel configuration indicator.

The base station shall set this field to '00' to indicate that the mobile station is to stop processing the Forward Supplemental Code Channels at the implicit action time of the message.

The base station shall set this field to '01' to indicate that the mobile station is to start processing the Forward Supplemental Code Channels in the Code Channel List at the implicit, explicit, or linked start time specified by this message (see 6.6.6.2.5.1).

The base station shall set this field to '10' if the Forward Supplemental Code Channels are specified in the message and the mobile station is to update its Code Channel List and stop processing the Forward Supplemental Code Channels at the implicit action time of the message.

The base station shall set this field to '11' if the Forward Supplemental Code Channels are specified in the message and the mobile station is to start processing the Forward Supplemental Code Channels at the implicit, explicit, or linked start time specified by this message (see 6.6.6.2.5.1).

EXPL_FOR_START_TIME - Explicit forward start time indicator.

This field indicates whether an explicit Forward Supplemental Code Channel start time is specified in this message.

The base station shall include this field only if FOR_SUP_CONFIG is set to '01 or '11'. If a FOR_START_TIME is specified in this message, the base station shall set this field to '1'. Otherwise, the base station shall set this field to '0'. If EXPL_FOR_START_TIME is set to '1', then the base station shall set USE_FOR_HDM_SEQ to '0'.

The following field is included only if EXPL_FOR_START_TIME is included and set to '1':

FOR_START_TIME - Start time of the Forward Supplemental Code Channel assignment.

The base station shall include this field only if FOR_SUP_CONFIG is set to '01' or '11'. If the EXPL_FOR_START_TIME field is set to '1', the base station shall set this field to the System Time, in units of 80 ms (modulo 64), at which the mobile station is to start processing the Forward Supplemental Code Channels. If EXPL_FOR_START_TIME is set to '0' the base station shall omit this field.

USE_FOR_DURATION - Use forward duration indicator.

The base station shall set this field to '1' if FOR_DURATION is included in the message. Otherwise, the base station shall set this field to '0'.

If FOR_SUP_CONFIG is set to '01' or '11', then the base station may set this field to '0' to indicate that the mobile station is to be assigned an infinite Forward Supplemental Code Channel assignment duration (i.e., the mobile station is to continue processing Forward Supplemental Code Channels until it receives a subsequent *Supplemental Channel Assignment Message* or a *General Handoff Direction Message* that specifies an updated FOR_DURATION). Otherwise, the base station may set this field to '1' to indicate that the mobile station is to be given a Forward Supplemental Code Channel assignment for the duration specified by the FOR_DURATION field.

If FOR_SUP_CONFIG is set to '00' or '10', then the base station shall set USE_FOR_DURATION to '0'.

FOR_DURATION - Duration of Forward Supplemental Code Channel assignment.

The base station shall include this field only if USE_FOR_DURATION is included and set to '1'. If included, this field indicates allocated duration, in units of 80 ms, during which the mobile station is to process the Forward Supplemental Code Channels.

USE_FOR_HDM_SEQ - Use Forward *General Handoff Direction Message* sequence number indicator.

This field indicates whether processing of the Forward Supplemental Code Channels shall take effect at the same time as a corresponding *General Handoff Direction Message*.

The base station shall include this field only if FOR_SUP_CONFIG is equal to '01' or '11'. If this message is linked with a *General Handoff Direction Message*, the base station shall set this field to '1'. Otherwise, the base station shall set this field to '0'. If USE_FOR_HDM_SEQ is set to '1', then the base station shall set EXPL_FOR_START_TIME to '0'.

FOR_LINKED_HDM_SEQ - Sequence number of the *General Handoff Direction Message*.

If the USE_FOR_HDM_SEQ field is included and set to '1', the base station shall set this field to the sequence number of the *General Handoff Direction Message* (HDM_SEQ) to which this Forward Supplemental Code Channel assignment is linked. Otherwise, if USE_FOR_HDM_SEQ is not included or is set to '0', then base station shall omit this field.

NUM_SUP_PILOTS - Number of pilots in the Active Set which have at least one associated Supplemental Code Channel.

If FOR_SUP_CONFIG is included and is set to '10' or '11', the base station shall include this field and shall set this field to the number of pilots for which there is at least one associated Supplemental Code Channel. This field shall not be included if FOR_SUP_CONFIG is omitted or is set to '01' or '00'.

NUM_SUP - Number of Forward Supplemental Code Channels.

If FOR_SUP_CONFIG is included and is set to '10' or '11', the base station shall include this field and shall set this field to the number of Forward Supplemental Code Channels assigned to the mobile station. NUM_FOR_SUP shall not exceed the maximum number of Forward Supplemental Code Channels for the negotiated multiplex option. This field shall not be included if FOR_SUP_CONFIG is omitted or is set to '01' or '00'.

If FOR_SUP_CONFIG is included and is set to '10' or '11', the base station shall include NUM_SUP_PILOTS occurrences of the following record, one for each pilot for which there is at least one associated Supplemental Code Channel:

PILOT_PN - Pilot PN sequence offset index.

The base station shall set this field to the pilot PN sequence offset for this pilot in units of 64 PN chips.

EXPL_CODE_CHAN - Explicit code channel indicator

The base station shall set this field to '1' to indicate explicit assignment of each Forward Supplemental Code Channel. The base station shall set this field to '0' if the mobile station is to use NUM_FOR_SUP successive code channels beginning with index BASE_CODE_CHAN (i.e., BASE_CODE_CHAN through BASE_CODE_CHAN + NUM_FOR_SUP - 1). In both cases (i.e., the explicit code channel list format and range format), the order of the code channel indices is the same for all the pilots specified in this message (i.e., the $i^{th}$ code channel index in the list for each pilot PN sequence offset indicates the appropriate code channel to be used for the $i^{th}$ Forward Supplemental Code Channel).

If EXPL_CODE_CHAN is set to '1', then the base station shall include NUM_FOR_SUP occurrences of the following field, one for each pilot which has been included:

SUP_CODE_CHAN - Supplemental Code Channel index.

The base station shall set this field to the code channel index (see 7.1.3.1.8) in the range 1 to 63 inclusive of the Supplemental Code Channel associated with this pilot.

If EXPL_CODE_CHAN is set to '0' then the base station shall include the following field:

BASE_CODE_CHAN - Base code channel index.

If EXPL_CODE_CHAN is equal to '0' the base station shall include this field and set it to the base code channel index (see 7.1.3.1.8) in the range of 1 to (63 - NUM_FOR_SUP + 1), inclusive, that the mobile station is to use as the first Forward Supplemental Code Channel associated with this pilot. The mobile station is to use NUM_FOR_SUP successive code channels beginning with index BASE_CODE_CHAN (i.e., BASE_CODE_CHAN through BASE_CODE_CHAN + NUM_FOR_SUP - 1) for the Forward Supplemental Code Channels associated with this pilot.

The base station shall not include this field if EXPL_CODE_CHAN is equal to '1' or if EXPL_CODE_CHAN is not included.

RESERVED - Reserved bits.

The base station shall add reserved bits as needed in order to make the length of the entire message equal to an integer number of octets. The base station shall set these bits to '0'.

7.7.3.3.2.25 Power Control Message

When the base station sends a *Power Control Message*, it shall use the following variable-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00011001') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| ENCRYPTION | 2 |
| PWR_CNTL_STEP | 3 |
| RESERVED | 4 |

MSG_TYPE - Message type.
The base station shall set this field to '00011001'.

ACK_SEQ - Acknowledgment sequence number.
See 7.7.3.3.1.1.

MSG_SEQ - Message sequence number.
See 7.7.3.3.1.1.

ACK_REQ - Acknowledgment required indicator.
See 7.7.3.3.1.1.

ENCRYPTION - Message encryption indicator.
See 7.7.3.3.1.2.

PWR_CNTL_STEP - Power control step size

The base station shall set this field to the closed loop power control step size parameter shown in Table 7.7.3.3.2.25-1 corresponding to the power control step size that the mobile station is to use for closed loop power control.

**Table 7.7.3.3.2.25-1. Closed Loop Power Control Step Size**

| PWR_CNTL_STEP (binary) | Power Control Step Size (dB nominal) |
|---|---|
| 000 | 1 |
| 001 | 0.5 |
| 010 | 0.25 |
| All other PWR_CNTL_STEP values are reserved. | |

RESERVED - Reserved bits.

The base station shall set this field to '0000'.

### 7.7.3.3.2.26 Extended Neighbor List Update Message

When the base station sends an *Extended Neighbor List Update Message*, it shall use the following variable-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00011010') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| ENCRYPTION | 2 |
| PILOT_INC | 4 |
| NGHBR_SRCH_MODE | 2 |
| SRCH_WIN_N | 4 |
| USE_TIMING | 1 |
| GLOBAL_TIMING_INCL | 0 or 1 |
| GLOBAL_TX_DURATION | 0 or 4 |
| GLOBAL_TX_PERIOD | 0 or 7 |
| NUM_NGHBR | 6 |

NUM_NGHBR occurrences of the following field:

| | |
|---|---|
| NGHBR_PN | 9 |
| SEARCH_PRIORITY | 0 or 2 |
| SRCH_WIN_NGHBR | 0 or 4 |
| TIMING_INCL | 0 or 1 |
| NGHBR_TX_OFFSET | 0 or 7 |
| NGHBR_TX_DURATION | 0 or 4 |
| NGHBR_TX_PERIOD | 0 or 7 |

| | |
|---|---|
| RESERVED | 0 - 7 (as needed) |

MSG_TYPE - Message type.

The base station shall set this field to '00011010.

ACK_SEQ - Acknowledgment sequence number.

See 7.7.3.3.1.1.

MSG_SEQ - Message sequence number.

See 7.7.3.3.1.1.

ACK_REQ - Acknowledgment required indicator.

See 7.7.3.3.1.1.

ENCRYPTION - Message encryption indicator.

See 7.7.3.3.1.2.

PILOT_INC - Pilot PN sequence offset index increment.

A mobile station searches for Remaining Set pilots at pilot PN sequence index values that are multiples of this value.

The base station shall set this field to the pilot PN sequence increment, in units of 64 PN chips, that mobile stations are to use for searching the Remaining Set. The base station should set this field to the largest increment such that the pilot PN sequence offsets of all its neighbor base stations are integer multiples of that increment.

The base station shall set this field to a value in the range 1 to 15 inclusive.

NGHBR_SRCH_MODE - Search mode.

The base station shall set this field to the value specified in Table 7.7.3.3.2.26-1 corresponding to the search mode.

**Table 7.7.3.3.2.26-1. NGHBR_SRCH_MODE Field**

| Value (binary) | Description |
|---|---|
| 00 | No search priorities or search windows |
| 01 | Search priorities |
| 10 | Search windows |
| 11 | Search windows and search priorities |

SRCH_WIN_N - Default search window size for the Neighbor Set.

The base station shall set this field to the value specified in Table 6.6.6.2.1-1 corresponding to the default search window size to be used by the mobile station for its Neighbor Set. The mobile station uses the default search window size for all pilots in its Neighbor Set when the search window is not specified for each pilot individually (NGHBR_SRCH_MODE is set to a value other than '010' and '011').

USE_TIMING - Use timing indicator.

If base station timing information is included for neighbor base stations, the base station shall set this field to '1'; otherwise, the base station shall set this field to '0'.

GLOBAL_TIMING-_INCL - Global timing included.

If USE_TIMING is set to '1', the base station shall include the field GLOBAL_TIMING_INCL and set this field as described below; otherwise, the base station shall omit this field.

If base station timing information is included globally for all neighbor base stations with TIMING_INCL equal to '1', the base station shall set this field to '1'; otherwise, the base station shall set this field to '0'.

GLOBAL_TX-_DURATION - Global neighbor transmit time duration.

If GLOBAL_TIMING_INCL is included and is set to '1', the base station shall include the field GLOBAL_TX_DURATION and shall set this field as described below; otherwise, the base station shall omit this field.

The base station shall set this field to the duration of the base station transmit window, during each period, in units of 80 ms. The base station should set this field to a value of 3 or greater.

GLOBAL_TX-_PERIOD - Global neighbor transmit time period.

If GLOBAL_TIMING_INCL is included and is set to '1', the base station shall include the field GLOBAL_TX_DURATION and shall set this field as described below; otherwise, the base station shall omit this field.

The base station shall set this field to duration of the period, in units of 80 ms.

NUM_NGHBR - Number of neighbor pilot PN sequences.

The base station shall set this field to the number of neighbors included in the message.

The base station shall include one occurrence of the following record for each pilot that a mobile station is to place in its Neighbor Set

NGHBR_PN - Neighbor pilot PN sequence offset index.

The base station shall include one occurrence of this field for each pilot in its neighbor list. The base station shall set this field to the pilot's PN sequence offset, in units of 64 PN chips.

SEARCH_PRIORITY - Pilot Channel search priority.

If NGHBR_SRCH_MODE is set to '001' or '011', then the base station shall set this field to the search priority for this neighbor. The base station shall set the search priority as specified in Table 7.7.3.3.2.26-2. If NGHBR_SRCH_MODE is set to any other value, the base station shall omit this field.

**Table 7.7.3.3.2.26-2. SEARCH_PRIORITY Field**

| Value (binary) | Search Priority |
|---|---|
| 00 | Low |
| 01 | Medium |
| 10 | High |
| 11 | Very high |

SRCH_WIN_NGHBR - Neighbor pilot channel search window size.

If NGHBR_SRCH_MODE is set to '010' or '011', then the base station shall set this field to the value specified in Table 6.6.6.2.1-1 corresponding to the search window size to be used by the mobile stations for this neighbor. If NGHBR_SRCH_MODE is set to any other value, the base station shall omit this field.

TIMING_INCL - Timing included indicator.

If USE_TIMING is set to '1', the base station shall include the field TIMING_INCL and set this field as described below; otherwise, the base station shall omit this field.

If base station timing information is included for this neighbor base station, the base station shall set this field to '1'; otherwise, the base station shall set this field to '0'.

NGHBR_TX_OFFSET - Neighbor transmit time offset.

If TIMING_INCL is included and is set to '1', the base station shall include the field NGHBR_TX_OFFSET and set this field as described below; otherwise, the base station shall omit this field.

The base station shall set this field to the time offset, in units of 80 ms, from the beginning of the neighbor timing period to the beginning of the first base station transmit window within the period. The beginning of the neighbor timing period occurs when $\lfloor t/4 \rfloor \bmod (16384) = 0$.

NGHBR_TX_DURATION - Neighbor transmit time duration.

If TIMING_INCL is included and is set to '1' and GLOBAL_TIMING_INCL is set to '0', the base station shall include the field NGHBR_TX_DURATION and set this field as described below; otherwise, the base station shall omit this field.

The base station shall set this field to duration of the base station transmit window, during each period, in units of 80 ms. The base station should set this field to a value of 3 or greater.

NGHBR_TX_PERIOD - Neighbor transmit time period.

If TIMING_INCL is included and is set to '1' and GLOBAL_TIMING_INCL is set to '0', the base station shall include the field NGHBR_TX_PERIOD and set this field as described below; otherwise, the base station shall omit this field.

The base station shall set this field to duration of the period, in units of 80 ms.

RESERVED - Reserved bits.

The base station shall add reserved bits as needed in order to make the length of the entire message equal to an integer number of octets. The base station shall set these bits to '0'.

7.7.3.3.2.27 Candidate Frequency Search Request Message

When the base station sends a *Candidate Frequency Search Request Message*, it shall use the following variable-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00011011') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| ENCRYPTION | 2 |
| USE_TIME | 1 |
| ACTION_TIME | 6 |
| RESERVED_1 | 4 |
| CFSRM_SEQ | 2 |
| SEARCH_TYPE | 2 |
| SEARCH_PERIOD | 4 |
| SEARCH_MODE | 4 |
| MODE_SPECIFIC_LEN | 8 |
| Mode-specific fields | 8 × MODE_SPECIFIC_LEN |

MSG_TYPE - Message type.

The base station shall set this field to '00011011'.

ACK_SEQ - Acknowledgment sequence number.

See 7.7.3.3.1.1.

MSG_SEQ - Message sequence number.

See 7.7.3.3.1.1.

ACK_REQ - Acknowledgment required indicator.

See 7.7.3.3.1.1.

ENCRYPTION - Message encryption indicator.

See 7.7.3.3.1.2.

USE_TIME - Use action time indicator.

This field indicate whether an ACTION_TIME is specified in this message.

If an ACTION_TIME is specified in this message, the base station shall set this field to '1'; otherwise, the base station shall set this field to '0'.

ACTION_TIME - Action time.

If the USE_TIME field is set to '1', the base station shall set this field to the System Time, in units of 80 ms (modulo 64), at which the search is to take effect. If the USE_TIME is set to '0' the base station shall set this field to '000000'. The mobile station shall interpret the action time as specified in 6.6.4.1.5.

RESERVED_1 - Reserved bits.

The mobile station shall set this field to '0000'.

CFSRM_SEQ - *Candidate Frequency Search Request Message* sequence number.

The base station shall set this field to the *Candidate Frequency Search Request Message* sequence number, as specified in 7.6.6.2.2.3.

SEARCH_TYPE - Search command.

The base station shall set this field to the appropriate SEARCH_TYPE code from Table 7.7.3.3.2.27-1 to indicate the purpose of the message.

**Table 7.7.3.3.2.27-1. SEARCH_TYPE Codes**

| SEARCH_TYPE (binary) | Meaning |
|---|---|
| 00 | Directs the mobile station to stop any periodic search in progress (see 6.6.6.2.8.3.4 and 6.6.6.2.10.4) |
| 01 | Directs the mobile station to perform a single search (see 6.6.6.2.8.3.1 and 6.6.6.2.10.1). |
| 11 | Directs the mobile station to perform a periodic search (see 6.6.6.2.8.3.2 and 6.6.6.2.10.2). |
| 10 | Reserved. |

SEARCH_PERIOD - Time between successive searches on the Candidate Frequency.

The base station shall set this field to the SEARCH_PERIOD value shown in Table 6.6.6.2.8.3.2-1 corresponding to the search period to be used by the mobile station, i.e., the time between successive searches on the Candidate Frequency.

SEARCH_MODE - Search mode.

The base station shall set this field to the SEARCH_MODE value specified in Table 7.7.3.3.2.27-2 corresponding to the type of search specified by this message.

**Table 7.7.3.3.2.27-2. SEARCH_MODE Types**

| SEARCH_MODE (binary) | Description |
|---|---|
| 0000 | Searches for CDMA pilots on a Candidate Frequency. |
| 0001 | Searches for analog channels. |
| 0010-1111 | Reserved |

MODE_SPECIFIC_LEN - Length of mode-specific fields.

The base station shall set this field to the number of octets in the mode-specific fields of this message.

Mode-specific fields - Search mode-specific fields.

The base station shall include mode-specific fields based on the SEARCH_MODE field.

If SEARCH_MODE is equal to '0000', the base station shall include the following fields:

| Field | Length (bits) |
|---|---|
| BAND_CLASS | 5 |
| CDMA_FREQ | 11 |
| SF_TOTAL_EC_THRESH | 5 |
| SF_TOTAL_EC_IO_THRESH | 5 |
| DIFF_RX_PWR_THRESH | 5 |
| MIN_TOTAL_PILOT_EC_IO | 5 |
| CF_T_ADD | 6 |
| TF_WAIT_TIME | 4 |
| CF_PILOT_INC | 4 |
| CF_SRCH_WIN_N | 4 |
| CF_SRCH_WIN_R | 4 |
| RESERVED_2 | 5 |
| PILOT_UPDATE | 1 |

If PILOT_UPDATE is set to '1' the base station shall include the following record:

| | |
|---|---|
| NUM_PILOTS | 6 |
| CF_NGHBR_SRCH_MODE | 2 |

If PILOT_UPDATE is set to '1', the base station shall include NUM_PILOTS occurrences of the following record:

| | |
|---|---|
| NGHBR_PN | 9 |
| SEARCH_SET | 1 |
| SEARCH_PRIORITY | 0 or 2 |
| SRCH_WIN_NGHBR | 0 or 4 |

| | |
|---|---|
| RESERVED_3 | 0 - 7 (as needed) |

BAND_CLASS - Band class.

The base station shall set this field to the CDMA band class of the Candidate Frequency.

CDMA_FREQ - Frequency assignment.

The base station shall set this field to the CDMA frequency assignment for the Candidate Frequency.

SF_TOTAL_EC-_THRESH - Serving Frequency total pilot $E_c$ threshold.

If the mobile station is not to use the measurement of total $E_c$ of the pilots in the Serving Frequency Active Set in the Candidate Frequency periodic search procedure, the base station shall set this field to '11111'; otherwise, the base station shall set this field to

$$\lceil (10 \times \log_{10} (total\_ec\_thresh) + 120) / 2 \rceil$$

where *total_ec_thresh* is defined by the following rule: The mobile station is not to visit the CDMA Candidate Frequency to search for pilots if the total $E_c$ of the pilots in the Serving Frequency Active Set is greater than *total_ec_thresh*.

SF_TOTAL_EC-_IO_THRESH - Serving Frequency total pilot $E_c/I_0$ threshold.

If the mobile station is not to use the measurement of total $E_c/I_0$ of the pilots in the Serving Frequency Active Set in the Candidate Frequency periodic search procedure, the base station shall set this field to '11111'; otherwise, the base station shall set this field to

$$\lfloor -20 \times \log_{10} (total\_ec\_io\_thresh) \rfloor$$

where *total_ec_io_thresh* is defined by the following rule: The mobile station is not to visit the CDMA Candidate Frequency to search for pilots if the total $E_c/I_0$ of the pilots in the Serving Frequency Active Set is greater than *total_ec_io_thresh*.

DIFF_RX_PWR-_THRESH - Minimum difference in received power.

If the mobile station is to search for pilots on the CDMA Candidate Frequency irrespective of the received power on the Candidate Frequency, the base station shall set this field to '00000'; otherwise, the base station shall set this field to

$$\lceil (minimum\_power\_diff + 30) / 2 \rceil$$

where *minimum_power_diff* is determined by the following rule: The mobile station is not to search for pilots on the CDMA Candidate Frequency if (*cand_freq_pwr* - *serving_freq_pwr*) is less than *minimum_power_diff* (in dB), where *cand_freq_pwr* is the received power on the CDMA Candidate Frequency, in dBm / 1.23 MHz, and *serving_freq_pwr* is the received power on the Serving Frequency, in dBm / 1.23 MHz.

MIN_TOTAL_PILOT-_EC_IO - Minimum total pilot $E_c/I_o$.

If the mobile station is to attempt to demodulate the Forward Traffic Channels irrespective of the strength of pilots in the Active Set, the base station shall set this field to '00000'; otherwise, the base station shall set this field to

$$\lfloor -20 \times \log_{10} \mathit{total\_pilot\_threshold} \rfloor$$

where *total_pilot_threshold* is defined by the following rule: The mobile station is not to attempt to demodulate the Forward Traffic Channels if the sum of $E_c/I_o$ of all pilots in the mobile station's Active Set is less than *total_pilot_threshold*.

CF_T_ADD - Pilot detection threshold for the CDMA Candidate Frequency.

This value is used by the mobile station to trigger the sending of the *Candidate Frequency Search Report Message* during a periodic search of the CDMA Candidate Frequency (see 6.6.6.2.8.3.2).

The base station shall set this field to the pilot detection threshold, expressed as an unsigned binary number equal to $\lfloor -2 \times 10 \times \log_{10} E_c/I_o \rfloor$.

TF_WAIT_TIME - CDMA Candidate Frequency total wait time.

The base station shall set this field to $\lfloor \mathit{max\_wait\_time} / 0.08 \rfloor$, where *max_wait_time* is the maximum time, in seconds, that the mobile station is to spend waiting for $N_{11m}$ consecutive good frames on the CDMA Target Frequency.

CF_PILOT_INC - Pilot PN sequence offset index increment to be used on the CDMA Candidate Frequency after handoff.

The base station shall set this field to the pilot PN sequence increment, in units of 64 PN chips, that the mobile station is to use for searching the Remaining Set, after a handoff to the CDMA Candidate Frequency is successfully completed. The base station should set this field to the largest increment such that the pilot PN sequence offsets of all its neighbor base stations are integer multiples of that increment.

CF_SRCH_WIN_N - Default search window size for the Candidate Frequency Search Set.

The base station shall set this field to the value specified in Table 6.6.6.2.1-1 corresponding to the default search window size to be used by the mobile station for its Candidate Frequency Neighbor Set. The mobile station uses the default search window size for all pilots in its Candidate Frequency Neighbor Set when the search window has not been specified for each pilot individually.

CF_SRCH_WIN_R - Search window size for the Remaining Set on the CDMA Candidate Frequency.

The base station shall set this field to the window size parameter shown in Table 6.6.6.2.1-1 corresponding to the number of PN chips that the mobile station is to search for pilots in the Remaining Set on the CDMA Candidate Frequency after a handoff is successfully completed.

RESERVED_2 - Reserved bits.

The base station shall set this field to '00000'.

PILOT_UPDATE - Pilot search parameter update indicator.

If the mobile station is to change its pilot search parameters, the base station shall set this field to '1'; otherwise, the base station shall set this field to '0'.

NUM_PILOTS - Number of pilots included in the message.

The base station shall set this field to the number of the CDMA Candidate Frequency pilots included in this message. The base station shall set this field to a value from 0 to $N_{8m}$, inclusive.

CF_NGHBR_SRCH-_MODE - Search mode for Candidate Frequency Search Set.

The base station shall set this field to the value shown in Table 7.7.3.3.2.27-3 corresponding to the search mode.

**Table 7.7.3.3.2.27-3. CF_NGHBR_SRCH_MODE Field**

| Value (binary) | Description |
|---|---|
| 00 | No search priorities or search windows specified |
| 01 | Search priorities specified |
| 10 | Search windows specified |
| 11 | Search windows and search priorities specified |

The base station shall include NUM_PILOTS occurrences of the following four-field record, one for each included CDMA Candidate Frequency pilot.

NGHBR_PN - Neighbor pilot PN sequence offset index.

The base station shall set this field to the pilot's PN sequence offset, in units of 64 PN chips.

SEARCH_SET - Flag to indicate if the corresponding pilot is to be searched.

The base station shall set this field to '1' if the mobile station should add the corresponding pilot to its Candidate Frequency Search Set; otherwise, the base station shall set this field to '0'.

SEARCH_PRIORITY - Pilot Channel search priority.

If CF_NGHBR_SRCH_MODE is set to '001' or '011', then the base station shall set this field to the search priority for this neighbor. The base station shall set the search priority as specified in Table 7.7.3.3.2.26-2. If CF_NGHBR_SRCH_MODE is set to any other value, the base station shall omit this field.

SRCH_WIN_NGHBR - Neighbor pilot channel search window size.

If CF_NGHBR_SRCH_MODE is set to '010' or '011', then the base station shall set this field to the value specified in Table 6.6.6.2.1-1 corresponding to the search window size to be used by mobile stations for this neighbor. If the CF_NGHBR_SRCH_MODE is set to any other value, the base station shall omit this field.

RESERVED_3 - Reserved bits.

The mobile station shall add reserved bits as needed in order to make the length of the entire message equal to an integer number of octets. The base station shall set these bits to '0'.

If SEARCH_MODE is equal to '0001', the base station shall include the following fields:

| Field | Length (bits) |
|---|---|
| BAND_CLASS | 5 |
| SF_TOTAL_EC_THRESH | 5 |
| SF_TOTAL_EC_IO_THRESH | 5 |
| RESERVED_4 | 6 |
| NUM_ANALOG_FREQS | 3 |
| NUM_ANALOG_FREQS occurrences of the following record: | |
| ANALOG_FREQ | 11 |
| | |
| RESERVED_5 | 0-7 |

BAND_CLASS - Band class.

The base station shall set this field to the CDMA band class associated with the analog frequencies included in this message.

SF_TOTAL_EC-_THRESH - Serving Frequency total pilot $E_c$ threshold.

If the mobile station is not to use the measurement of total $E_c$ of the pilots in the Serving Frequency Active Set in the Analog Frequencies periodic search procedure, the base station shall set this field to '11111'; otherwise, the base station shall set this field to

$$\lceil (10 \times \log_{10} (total\_ec\_thresh) + 120) / 2 \rceil$$

where *total_ec_thresh* is defined by the following rule: The mobile station is not to visit any analog frequency if the total $E_c$ of the pilots in the Serving Frequency Active Set is greater than *total_ec_thresh*.

SF_TOTAL_EC-_IO_THRESH - Serving Frequency total pilot $E_c/I_o$ threshold.

If the mobile station is not to use the measurement of total $E_c/I_o$ of the pilots in the Serving Frequency Active Set in the Analog Frequencies periodic search procedure, the base station shall set this field to '11111'; otherwise, the base station shall set this field to

$$\lfloor - 20 \times \log_{10} (total\_ec\_io\_thresh) \rfloor$$

where *total_ec_io_thresh* is defined by the following rule: The mobile station is not to visit any analog frequency if the total $E_c/I_o$ of the pilots in the Serving Frequency Active Set is greater than *total_ec_io_thresh*.

RESERVED_4 - Reserved bits.

The base station shall set this field to '000000'.

NUM_ANALOG_FREQS - Number of analog frequencies.

The base station shall set this field to the number of neighbors on the candidate frequency. The base station shall set this field to a value from 1 to 7, inclusive.

The message will include NUM_ANALOG_FREQS occurrences of the following one-field record, one for each neighbor on the candidate frequency.

ANALOG_FREQ - Analog frequency channel number.

The base station shall set this field to the analog frequency channel number to search.

RESERVED_5 - Reserved bits.

The mobile station shall add reserved bits as needed in order to make the length of the entire message equal to an integer number of octets. The base station shall set these bits to '0'.

#### 7.7.3.3.2.28 Candidate Frequency Search Control Message

When the base station sends a *Candidate Frequency Search Control Message*, it shall use the following fixed-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00011100') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| ENCRYPTION | 2 |
| USE_TIME | 1 |
| ACTION_TIME | 6 |
| CFSCM_SEQ | 2 |
| SEARCH_TYPE | 2 |
| RESERVED | 4 |

MSG_TYPE - Message type.

The base station shall set this field to '00011100'.

ACK_SEQ - Acknowledgment sequence number.

See 7.7.3.3.1.1.

MSG_SEQ - Message sequence number.

See 7.7.3.3.1.1.

ACK_REQ - Acknowledgment required indicator.

See 7.7.3.3.1.1.

ENCRYPTION - Message encryption indicator.

See 7.7.3.3.1.2.

USE_TIME - Use action time indicator.

This field indicates whether an ACTION_TIME is specified in this message.

If an ACTION_TIME is specified in this message, the base station shall set this field to '1'; otherwise, the base station shall set this field to '0'.

ACTION_TIME - Action time.

If the USE_TIME field is set to '1', the base station shall set this field to the System Time, in units of 80 ms (modulo 64), at which the message is to take effect. If the USE_TIME field is set to '0' the base station shall set this field to '000000'.

CFSCM_SEQ - *Candidate Frequency Search Control Message* sequence number.

The base station shall set this field to the *Candidate Frequency Search Control Message* sequence number, as specified in 7.6.6.2.2.5.

SEARCH_TYPE - Search command.

The base station shall set this field to the appropriate SEARCH_TYPE code from Table 7.7.3.3.2.27-1 to indicate the purpose of the message.

RESERVED - Reserved bits.

The mobile station shall set this field to '0000'.

7.7.3.3.2.29 Power Up Function Message

When the base station sends a *Power Up Function Message* on the Forward Traffic Channel, it shall use the following variable-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00011101') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| ENCRYPTION | 2 |
| USE_TIME | 1 |
| ACTION_TIME | 6 |
| ACTION_TIME_FRAME | 2 |
| PUF_SETUP_SIZE | 6 |
| PUF_PULSE_SIZE | 7 |
| PUF_INTERVAL | 10 |
| PUF_INIT_PWR | 6 |
| PUF_PWR_STEP | 5 |
| TOTAL_PUF_PROBES | 4 |
| MAX_PWR_PUF | 4 |
| PUF_FREQ_INCL | 1 |
| PUF_BAND_CLASS | 0 or 5 |
| PUF_CDMA_FREQ | 0 or 11 |
| RESERVED | 3 |

MSG_TYPE - Message type.
The base station shall set this field to '00011101'.

ACK_SEQ - Acknowledgment sequence number.
See 7.7.3.3.1.1.

MSG_SEQ - Message sequence number.
See 7.7.3.3.1.1.

ACK_REQ - Acknowledgment required indicator.
See 7.7.3.3.1.1.
The base station shall set this field equal to '1'.

ENCRYPTION - Message encryption indicator.

See 7.7.3.3.1.2.

USE_TIME - Use action time indicator.

The base station shall set this field to '1'.

ACTION_TIME - Action time.

The base station shall set this field to the System Time, in units of 80 ms (modulo 64), used in calculating the start of the first PUF probe.

ACTION_TIME_FRAME - Action time frame.

The base station shall set this field to the number of frames after ACTION_TIME that the mobile station is to begin the first PUF probe.

PUF_SETUP_SIZE - Number of PUF setup power control groups.

The base station shall set this field to one less than the number of power control groups that the mobile station is to transmit at nominal power prior to transmitting a PUF pulse. The base station shall set the values of PUF_SETUP_SIZE and PUF_PULSE_SIZE so that [PUF_SETUP_SIZE + 1 + PUF_PULSE_SIZE + 1] mod 16 is not equal to 0.

PUF_PULSE_SIZE - Number of PUF pulse power control groups.

The base station shall set this field to one less than the number of power control groups that the mobile station is to transmit at elevated power level during the PUF pulse. The base station shall set the values of PUF_SETUP_SIZE and PUF_PULSE_SIZE so that [PUF_SETUP_SIZE + 1 + PUF_PULSE_SIZE + 1] mod 16 is not equal to 0.

PUF_INTERVAL - PUF interval.

The base station shall set this field to the number of frames between the start of each PUF probe.

PUF_INIT_PWR - Power increase of initial PUF pulse.

The base station shall set this field to the amount (in dB) that the mobile station is to increase its mean output power for the first PUF pulse.

PUF_PWR_STEP - PUF power step.

The base station shall set this field to the value (in dB) by which the mobile station is to increment the power of a PUF pulse above nominal power from one PUF pulse to the next.

TOTAL_PUF_PROBES - Total number of PUF probes.

The base station shall set this field to one less than the maximum number of PUF probes the mobile station is to transmit in a PUF attempt.

MAX_PWR_PUF - Maximum number of PUF probes transmitted at full power.

The base station shall set this field to one less than the number of PUF pulses that the mobile station is to transmit at maximum power level.

PUF_FREQ_INCL - Frequency included indicator.

If the mobile station is to change PUF_BAND_CLASS or PUF_CDMA_FREQ, the base station shall set this field to '1'; otherwise, the base station shall set this field to '0'.

PUF_BAND_CLASS - Band class.

If PUF_FREQ_INCL is set to '1', the base station shall include this field and set it to the CDMA band class corresponding to the CDMA frequency assignment for the CDMA Channel as specified in TSB58-A; otherwise, the base station shall omit this field.

PUF_CDMA_FREQ - Frequency assignment.

If PUF_FREQ_INCL is set to '1', the base station shall include this field and set it to the CDMA Channel number, in the specified CDMA band class, corresponding to the CDMA frequency for the CDMA Channel as specified in 7.1.1.1; otherwise, the base station shall omit this field.

RESERVED - Reserved bit.

The base station shall set this field to '0'.

7.7.3.3.2.30 Power Up Function Completion Message

When the base station sends a *Power Up Function Completion Message* on the Forward Traffic Channel, it shall use the following variable-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00011110') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| ENCRYPTION | 2 |
| RESERVED | 6 |
| LOC_IND | 1 |
| RESERVED_1 | 0 or 3 |
| MS_LAT | 0 or 22 |
| MS_LONG | 0 or 23 |
| MS_LOC_TSTAMP | 0 or 24 |

MSG_TYPE - Message type.

The base station shall set this field to '00011110'.

ACK_SEQ - Acknowledgment sequence number.

See 7.7.3.3.1.1.

MSG_SEQ - Message sequence number.

See 7.7.3.3.1.1.

ACK_REQ - Acknowledgment required indicator.

See 7.7.3.3.1.1.

ENCRYPTION - Message encryption indicator.

See 7.7.3.3.1.2.

RESERVED - Reserved bits.

The base station shall set these bits to '000000'.

LOC_IND - Location indicator

If the base station is to include MS_LAT, MS_LONG, and MS_LOC_TSTAMP in this message, the base station shall set this field to '1'; otherwise, the base station shall set this field to '0'.

RESERVED_1 - Reserved bits.

If LOC_IND is equal to '1', the base station shall set these bits to '000'.

Otherwise, the base station shall not include this field.

MS_LAT - Mobile station latitude.

If LOC_IND is equal to '1', the base station shall set this field to the mobile station's latitude in units of 0.25 second, expressed as a two's complement signed number with positive numbers signifying North latitudes. The base station shall set this field to a value in the range -1296000 to 1296000 inclusive (corresponding to a range of -90° to +90°).

Otherwise, the base station shall not include this field.

MS_LONG - Mobile station longitude.

If LOC_IND is equal to '1', the base station shall set this field to the mobile station's longitude in units of 0.25 second, expressed as a two's complement signed number with positive numbers signifying East longitude. The base station shall set this field to a value in the range -2592000 to 2592000 inclusive (corresponding to a range of -180° to +180°).

Otherwise, the base station shall not include this field.

MS_LOC_TSTAMP - Time stamp.

If LOC_IND is equal to '1', the base station shall set this field to the time at which the mobile station's location parameters were received.

Otherwise, the base station shall not include this field.

This field is formatted as shown below.

| **Field** | **Length (bits)** |
|---|---|
| HOURS | 8 |
| MINUTES | 8 |
| SECONDS | 8 |
| Note: All subfields contain two 4-bit BCD numbers giving the decimal value of the subfield. For example, if the minute is 53, the MINUTES subfield contains '01010011'. | |

HOURS - Current hour (UTC).

This field shall be set to the current hour (UTC), in the range 0-23.

MINUTES - Current minutes (UTC).

This field shall be set to the current minutes (UTC), in the range 0-59.

SECONDS - Current seconds (UTC).

This field shall be set to the current seconds (UTC), in the range 0-59.

7.7.3.3.2.31 General Handoff Direction Message

When the base station sends a *General Handoff Direction Message*, it shall use the following variable-length message format:

| Field | Length (bits) |
|---|---|
| MSG_TYPE ('00011111') | 8 |
| ACK_SEQ | 3 |
| MSG_SEQ | 3 |
| ACK_REQ | 1 |
| ENCRYPTION | 2 |
| USE_TIME | 1 |
| ACTION_TIME | 0 or 6 |
| HDM_SEQ | 2 |
| SEARCH_INCLUDED | 1 |
| SRCH_WIN_A | 0 or 4 |
| SRCH_WIN_N | 0 or 4 |
| SRCH_WIN_R | 0 or 4 |
| T_ADD | 0 or 6 |
| T_DROP | 0 or 6 |
| T_COMP | 0 or 4 |
| T_TDROP | 0 or 4 |
| SOFT_SLOPE | 0 or 6 |
| ADD_INTERCEPT | 0 or 6 |
| DROP_INTERCEPT | 0 or 6 |
| EXTRA_PARMS | 1 |
| P_REV | 0 or 8 |
| PACKET_ZONE_ID | 0 or 8 |
| FRAME_OFFSET | 0 or 4 |
| PRIVATE_LCM | 0 or 1 |
| RESET_L2 | 0 or 1 |
| RESET_FPC | 0 or 1 |
| SERV_NEG_TYPE | 0 or 1 |

(continues on next page)

| Field | Length (bits) |
|---|---|
| ENCRYPT_MODE | 0 or 2 |
| NOM_PWR_EXT | 0 or 1 |
| NOM_PWR | 0 or 4 |
| NUM_PREAMBLE | 0 or 3 |
| BAND_CLASS | 0 or 5 |
| CDMA_FREQ | 0 or 11 |
| RETURN_IF_HANDOFF_FAIL | 0 or 1 |
| COMPLETE_SEARCH | 0 or 1 |
| PERIODIC_SEARCH | 0 or 1 |
| SERVICE_INCLUDED | 0 or 1 |
| SERV_CON_SEQ | 0 or 3 |
| RECORD_TYPE | 0 or 8 |
| RECORD_LEN | 0 or 8 |
| Type-specific fields | 0 or 8 x RECORD_LEN |
| SUP_CHAN_PARMS_INCLUDED | 1 |
| FOR_INCLUDED | 0 or 1 |
| FOR_SUP_CONFIG | 0 or 2 |
| NUM_FOR_SUP | 0 or 3 |
| USE_FOR_DURATION | 0 or 1 |
| FOR_DURATION | 0 or 8 |
| REV_INCLUDED | 0 or 1 |
| REV_DTX_DURATION | 0 or 4 |
| CLEAR_RETRY_DELAY | 0 or 1 |
| USE_REV_DURATION | 0 or 1 |
| REV_DURATION | 0 or 8 |
| NUM_REV_CODES | 0 or 3 |
| USE_T_ADD_ABORT | 0 or 1 |
| REV_PARMS_INCLUDED | 0 or 1 |
| T_MULCHAN | 0 or 3 |
| BEGIN_PREAMBLE | 0 or 3 |
| RESUME_PREAMBLE | 0 or 3 |

(continues on next page)

| Field | Length (bits) |
|---|---|
| USE_PWR_CNTL_STEP | 1 |
| PWR_CNTL_STEP | 0 or 3 |
| NUM_PILOTS | 3 |

NUM_PILOTS occurrences of the following record:

| | |
|---|---|
| PILOT_PN | 9 |
| PWR_COMB_IND | 1 |
| FOR_FUND_CODE_CHAN | 8 |
| FOR_SUP_INCLUDED | 0 or 1 |
| FOR_SUP_CHAN_REC Record | 0 or 9 or (1 + 8 × NUM_FOR_SUP) |

| | |
|---|---|
| RESERVED | 0 - 7 (as needed) |

MSG_TYPE - Message type.

The base station shall set this field to '00011111'.

ACK_SEQ - Acknowledgment sequence number.

See 7.7.3.3.1.1.

MSG_SEQ - Message sequence number.

See 7.7.3.3.1.1.

ACK_REQ - Acknowledgment required indicator.

See 7.7.3.3.1.1.

ENCRYPTION - Message encryption indicator.

See 7.7.3.3.1.2.

USE_TIME - Use action time indicator.

This field indicates whether an ACTION_TIME is specified in this message.

If an ACTION_TIME is specified in this message, the base station shall set this field to '1'; otherwise, the base station shall set this field to '0'.

ACTION_TIME - Action time.

If the USE_TIME field is set to '1', the base station shall set this field to the System Time, in units of 80 ms (modulo 64), at which the handoff is to take effect. If the USE_TIME field is set to '0' the base station shall omit this field.

HDM_SEQ - *General Handoff Direction Message* sequence number.

This field is used by the mobile station in the *Power Measurement Report Message* to identify the order in which the reported pilot strengths are sent.

The base station shall set this field to the handoff message sequence number, as specified in 7.6.6.2.2.10.

SEARCH_INCLUDED - Pilot search parameters included.

If the mobile station is to change its pilot search parameters, the base station shall set this field to '1'; otherwise, the base station shall set this field to '0'.

SRCH_WIN_A - Search window size for the Active Set and Candidate Set.

If SEARCH_INCLUDED is set to '1', the base station shall include the field SRCH_WIN_A and set this field to the window size parameter shown in Table 6.6.6.2.1-1 corresponding to the number of PN chips that the mobile station is to search for pilots in the Active Set and the Candidate Set; otherwise, the base station shall omit this field.

SRCH_WIN_N - Search window size for the Neighbor Set.

If SEARCH_INCLUDED is set to '1', the base station shall include the field SRCH_WIN_N and set this field to the window size parameter shown in Table 6.6.6.2.1-1 corresponding to the search window size to by used by mobile stations for the Neighbor Set after completion of the handoff; otherwise, the base station shall omit this field.

SRCH_WIN_R - Search window size for the Remaining Set.

If SEARCH_INCLUDED is set to '1', the base station shall include the field SRCH_WIN_R and set this field to the window size parameter shown in Table 6.6.6.2.1-1 corresponding to the search window size to by used by mobile stations for the Remaining Set after completion of the handoff; otherwise, the base station shall omit this field.

T_ADD - Pilot detection threshold.

This value is used by the mobile station to trigger the transfer of a pilot from the Neighbor Set or Remaining Set to the Candidate Set (see 6.6.6.2.6) and to trigger the sending of the *Pilot Strength Measurement Message* initiating the handoff process (see 6.6.6.2.5.2).

If SEARCH_INCLUDED is set to '1', the base station shall include the field T_ADD and set this field to the pilot detection threshold, expressed as an unsigned binary number equal to $\lfloor -2 \times 10 \times \log_{10} E_c/I_o \rfloor$; otherwise, the base station shall omit this field.

T_DROP - Pilot drop threshold.

This value is used by mobile stations to start a handoff drop timer for pilots in the Active Set and the Candidate Set (see 6.6.6.2.3).

If SEARCH_INCLUDED is set to '1', the base station shall include the field T_DROP and set this field to the pilot drop threshold, expressed as an unsigned binary number equal to $\lfloor -2 \times 10 \times \log_{10} E_c/I_o \rfloor$; otherwise, the base station shall omit this field.

T_COMP - Active Set versus Candidate Set comparison threshold.

The mobile station transmits a *Pilot Strength Measurement Message* when the strength of a pilot in the Candidate Set exceeds that of a pilot in the Active Set by this margin (see 6.6.6.2.5.2).

If SEARCH_INCLUDED is set to '1', the base station shall include the field T_COMP and set this field to the threshold Candidate Set pilot to Active Set pilot ratio, in units of 0.5 dB; otherwise, the base station shall omit this field.

T_TDROP - Drop timer value.

Timer value after which an action is taken by the mobile station for a pilot that is a member of the Active Set or Candidate Set, and whose strength has not become greater than T_DROP. If the pilot is a member of the Active Set, a *Pilot Strength Measurement Message* is issued. If the pilot is a member of the Candidate Set, it will be moved to the Neighbor Set.

If SEARCH_INCLUDED is set to '1', the base station shall include the field T_TDROP and set this field to the T_TDROP value shown in Table 6.6.6.2.3-1 corresponding to the drop timer value to be used by the mobile station; otherwise, the base station shall omit this field.

SOFT_SLOPE - The slope in the inequality criterion for adding a pilot to the active set, or dropping a pilot from the active set (see 6.6.6.2.3 and 6.6.6.2.5.2).

If SEARCH_INCLUDED is set to '1', the base station shall include the field SOFT_SLOPE in the additional fields and set this field as an unsigned binary number; otherwise, the base station shall omit this field.

ADD_INTERCEPT - The intercept in the inequality criterion for adding a pilot to the active set (see 6.6.6.2.5.2).

If SEARCH_INCLUDED is set to '1', the base station shall include the field ADD_INTERCEPT in the additional fields and set this field as a signed binary number; otherwise, the base station shall omit this field.

DROP_INTERCEPT - The intercept in the inequality criterion for dropping a pilot from the active set (see 6.6.6.2.3).

If SEARCH_INCLUDED is set to '1', the base station shall include the field DROP_INTERCEPT in the additional fields and set this field as a signed binary number; otherwise, the base station shall omit this field.

EXTRA_PARMS - Extra parameters included.

If the mobile station is to change FRAME_OFFSET, PRIVATE_LCM, ENCRYPT_MODE, NOM_PWR, BAND_CLASS, or CDMA_FREQ, or the mobile station is to perform a reset of the acknowledgment procedures, or the mobile station is to reset Forward Traffic Channel power control counters, the base station shall set this field to '1'; otherwise, the base station shall set this field to '0'.

P_REV - Protocol revision level.

If EXTRA_PARMS is set to '1', the base station shall set this field to the base station protocol revision level that the mobile station is to use after completion of the handoff; otherwise, the base station shall omit this field.

PACKET_ZONE_ID - Packet data services zone identifier.

If EXTRA_PARMS is set to '1', the base station shall include the field PACKET_ZONE_ID and set this field as described below; otherwise, the base station shall omit this field.

If the base station supports a packet data service zone, the base station shall set this field to the non-zero packet data services zone identifier that the mobile station is to use after completion of the handoff.

If the base station does not support a packet data service zone, the base station shall set this field to '00000000'.

FRAME_OFFSET - Frame offset.

The Forward and Reverse Traffic Channel frames are delayed FRAME_OFFSET × 1.25 ms relative to system timing (see 7.1.3.5.1).

If EXTRA_PARMS is set to '1', the base station shall include the field FRAME_OFFSET and set this field to the Forward and Reverse Traffic Channel frame offset; otherwise, the base station shall omit this field.

PRIVATE_LCM - Private long code mask indicator.

This field is used to change the long code mask after a hard handoff.

If EXTRA_PARMS is set to '1', the base station shall include the field PRIVATE_LCM and set this field as described below; otherwise, the base station shall omit this field.

If the private long code mask is to be used after the handoff, the base station shall set this field to '1'; otherwise, the base station shall set this field to '0'.

RESET_L2 - Reset acknowledgment procedures command.

This field is used to reset acknowledgment processing in the mobile station.

If EXTRA_PARMS is set to '1', the base station shall include the field RESET_L2 and set this field as described below; otherwise, the base station shall omit this field.

If the field is included and the mobile station is to reset its acknowledgment procedures, the base station shall set this field to '1'; otherwise, the base station shall set this field to '0'.

RESET_FPC - Reset Forward Traffic Channel power control.

This field is used to reset the Forward Traffic Channel power control counters.

If EXTRA_PARMS is set to '1', the base station shall include the field RESET_FPC and set this field as described below; otherwise, the base station shall omit this field.

The base station shall set this field to '0' if the Forward Traffic Channel power control counters are to be maintained after completion of the handoff. If the counters are to be initialized as specified in 6.6.4.1.1.1, then the base station shall set this field to '1'.

SERV_NEG_TYPE - Service negotiation type.

If EXTRA_PARMS is set to '1', the base station shall include the field SERV_NEG_TYPE and set this field as described below; otherwise, the base station shall omit this field.

If the mobile station is to use service negotiation, the base station shall set this field to '1'. If the mobile station is to use service option negotiation, the base station shall set this field to '0'.

ENCRYPT_MODE - Message encryption mode.

If EXTRA_PARMS is set to '1', the base station shall include the field ENCRYPT_MODE and set this field to the ENCRYPT_MODE value shown in Table 7.7.2.3.2.8-2 corresponding to the encryption mode that is to be used for messages sent on the Forward and Reverse Traffic Channels, as specified in 6.3.12.2; otherwise, the base station shall omit this field.

NOM_PWR_EXT - Extended nominal transmit power.

If EXTRA_PARMS is set to '1', the base station shall include this field and set this field as described below; otherwise, the base station shall omit this field.

If this field is included, a Band Class 0 base station shall set this field to '0'.

If this field is included, a Band Class 1 base station shall set this field to '1' if the correction factor to be used by the mobile station in the open loop power estimate is between -24 dB and -9 dB inclusive; otherwise (the correction factor is in the range -8 dB to 7 dB inclusive), the base station shall set this field to '0'.

NOM_PWR - Nominal transmit power offset.

If EXTRA_PARMS is set to '1', the base station shall include the field NOM_PWR and set this field to the correction factor to be used by the mobile station in the open loop power estimate, expressed as a two's complement value in units of 1 dB (see 6.1.2.3.1); otherwise, the base station shall omit this field.

NUM_PREAMBLE - Number of Traffic Channel preamble frames.

If EXTRA_PARMS is set to '1', the base station shall include the field NUM_PREAMBLE and set this field to the number of Traffic Channel preamble frames that the mobile station is to send when performing a handoff; otherwise, the base station shall omit this field.

BAND_CLASS - Band class.

If EXTRA_PARMS is set to '1', the base station shall include the field BAND_CLASS and set this field to the CDMA band class corresponding to the CDMA frequency assignment for the CDMA Channel as specified in TSB58-A; otherwise, the base station shall omit this field.

CDMA_FREQ - Frequency assignment.

If EXTRA_PARMS is set to '1', the base station shall include the field CDMA_FREQ and set this field to the CDMA Channel number, in the specified CDMA band class, corresponding to the CDMA frequency assignment for the CDMA Channel as specified in 7.1.1.1; otherwise, the base station shall omit this field.

RETURN_IF_HANDOFF-_FAIL - Return on failure flag.

If EXTRA_PARMS is set to '1', the base station shall include the field RETURN_IF_HANDOFF_FAIL and set this field as described below; otherwise, the base station shall omit this field.

If the base station includes this field, it shall set this field to '1' if the mobile station is to resume the use of the Active Set on the Serving Frequency following an unsuccessful hard handoff attempt, as specified in 6.6.6.2.8.2; otherwise, the base station shall set this field to '0'.

COMPLETE_SEARCH - Flag to complete search.

If RETURN_IF_HANDOFF_FAIL is included and is set to '1', the base station shall include the field COMPLETE_SEARCH and set this field as described below; otherwise, the base station shall omit this field.

If the base station includes this field, it shall set this field to '1' if the mobile station is to complete the search of the Candidate Frequency Search Set before resuming the use of the Active Set on the Serving Frequency when an inter-frequency handoff attempt is unsuccessful, as specified in 6.6.6.2.8.2; otherwise, the base station shall set this field to '0'.

PERIODIC_SEARCH - Flag to search the Candidate Frequency periodically.

If EXTRA_PARMS is set to '1', the base station shall include the field PERIODIC_SEARCH and set this field as described below; otherwise, the base station shall omit this field.

If the base station includes this field, it shall set this field to '1' if the mobile station is to periodically search the Candidate Frequency, as specified in 6.6.6.2.8.3; otherwise, the base station shall set this field to '0'.

SERVICE_INCLUDED - Service configuration parameters included.

If EXTRA_PARAMS is set to '1', the base station shall include the field SERVICE_INCLUDED and shall set this field as described below; otherwise, the base station shall omit this field.

The base station shall set this field to '1' if it includes service configuration parameters in the message; otherwise, the base station shall set this field to '0'.

SERV_CON_SEQ - Connect sequence number.

If SERVICE_INCLUDED is included and is set to '1', the base station shall include the field SERV_CON_SEQ and shall set this field to the connect sequence number pertaining to this service configuration as specified in 7.6.4.1.2.1.2.

If SERVICE_INCLUDED is included and is set to '1', the base station shall include one occurrence of the following three-field record to specify the service configuration.

RECORD_TYPE - Information record type.

If SERVICE_INCLUDED is included and is set to '1', the base station shall include the field RECORD_TYPE and shall set this field to the record type value shown in Table 7.7.5-1 corresponding to the Service Configuration information record.

RECORD_LEN - Information record length.

If SERVICE_INCLUDED is included and is set to '1', the base station shall include the field RECORD_LEN and shall set this field to the number of octets included in the type-specific fields of the Service Configuration information record.

Type-specific fields - Type-specific fields.

If SERVICE_INCLUDED is included and is set to '1', the base station shall include the type specific fields and shall set these fields as specified in 7.7.5.7 for the Service Configuration information record.

SUP_CHAN_PARAMS-_INCLUDED - Supplemental channel parameters included indicator.

The base station shall set this field to '1' if the base station includes the FOR_INCLUDED, REV_INCLUDED, and REV_PARAMS_INCLUDED fields in the message; otherwise, the base station shall set this field to '0'.

FOR_INCLUDED - Forward assignment information included indicator.

If SUP_CHAN_PARMS_INCLUDED is set to '1', the base station shall include the field FOR_INCLUDED and set this field as described below; otherwise, the base station shall omit this field.

If the base station includes this field, it shall set this field to '1' if Forward Supplemental Code Channel assignment information is included in the message; otherwise, the base station shall set this field to '0'.

FOR_SUP_CONFIG - Forward Supplemental Code Channel configuration indicator.

If FOR_INCLUDED is included and is set to '1', the base station shall include the field FOR_SUP_CONFIG and set this field according to the following rules:

The base station shall set this field to '00' if Forward Supplemental Code Channels are not specified in the message, and the mobile station is to stop processing all Forward Supplemental Code Channels.

The base station shall set this field to '01' if Forward Supplemental Code Channels are not specified in the message, and the mobile station is to start processing the Forward Supplemental Code Channels previously stored in its Code Channel List, $CODE\_CHAN\_LIST_S$.

The base station shall set this field to '10' if the Forward Supplemental Code Channels are specified in the message, and the mobile station is to stop processing all Forward Supplemental Code Channels in $CODE\_CHAN\_LIST_S$, and to update the $CODE\_CHAN\_LIST_S$, according to the information contained in the message.

The base station shall set this field to '11' if the Forward Supplemental Code Channels are specified in the message, and the mobile station is to update its Code Channel List, $CODE\_CHAN\_LIST_S$, according to the information contained in the message and to start processing the Forward Supplemental Code Channels.

NUM_FOR_SUP - Number of Forward Supplemental Code Channels.

If FOR_SUP_CONFIG is included and is set to '10' or '11', the base station shall include the field NUM_FOR_SUP and set it to the number of Forward Supplemental Code Channels assigned to the mobile station; otherwise, the base station shall omit this field. NUM_FOR_SUP shall not exceed the maximum number of Forward Supplemental Code Channels for the negotiated multiplex option.

USE_FOR_DURATION - Use forward duration indicator.

If FOR_SUP_CONFIG is included and is set to '01' or '11' the base station shall include the field USE_FOR_DURATION and set this field as described below; otherwise the base station shall omit this field.

The base station shall set this field to '1' if the FOR_DURATION field is included in the message and the mobile station is to process the Forward Supplemental Code Channels for a time duration indicated by FOR_DURATION.

The base station shall set this field to '0' if the mobile station is to process the Forward Supplemental Code Channels for an indefinite duration (i.e., the mobile station is to continue processing Forward Supplemental Code Channels until it receives a subsequent *Supplemental Channel Assignment Message* or a *General Handoff Direction Message* that specifies a different Forward Supplemental Code Channel assignment.

FOR_DURATION - Duration of Forward Supplemental Code Channel assignment.

If USE_FOR_DURATION is included and is set to '1' the base station shall include the field FOR_DURATION and set this field to the allocated duration, in units of 80 ms, for which the mobile station is to process the Forward Supplemental Code Channels; otherwise, the base station shall omit this field.

REV_INCLUDED - Reverse assignment information included indicator.

If SUP_CHAN_PARMS_INCLUDED is set to '1', the base station shall include the field REV_INCLUDED and set this field as described below; otherwise, the base station shall omit this field.

If the base station includes this field, it shall set this field to '1' if Reverse Supplemental Code Channel assignment information is included in the message; otherwise, the base station shall set this field to '0'.

REV_DTX_DURATION - Reverse Discontinuous Transmission Duration.

If REV_INCLUDED is included and is set to '1', the base station shall include the field REV_DTX_DURATION; otherwise the base station shall omit this field.

If the base station includes this field, it shall set this field to the maximum duration of time in units of 20 ms that the mobile station is allowed to stop transmission on a Reverse Supplemental Code Channel within the reverse assignment duration. The base station shall set this field to '0000' if the mobile station is to stop using a Reverse Supplemental Code Channel once it has stopped transmitting on that Reverse Supplemental Channel. The base station shall set this field to '1111' if the mobile station is allowed to resume transmission on a Reverse Supplemental Code Channel at any time within the reverse assignment duration.

CLEAR_RETRY_DELAY - Clear retry delay indicator.

If REV_INCLUDED is included and is set to '1', the base station shall include the field CLEAR_RETRY_DELAY and set this field as described below; otherwise the base station shall omit this field.

The base station shall set this field to '1' to indicate that the mobile station is to clear any existing retry delay which it has stored (see 6.6.6.2.5.1); otherwise, the base station shall set this field to '0'.

USE_REV_DURATION - Use reverse duration indicator.

If REV_INCLUDED is included and is set to '1', the base station shall include the field USE_REV_DURATION and set this field as described below; otherwise the base station shall omit this field.

The base station shall set this field to '1' if the REV_DURATION field is included in the message and the mobile station is allowed to transmit on the Reverse Supplemental Code Channels for a time duration indicated by REV_DURATION.

The base station shall set this field to '0' if the mobile station is allowed to transmit on the Reverse Supplemental Code Channels for an indefinite duration (i.e., the mobile station may continue to transmit on the Reverse Supplemental Code Channels until it receives a subsequent *Supplemental Channel Assignment Message* or a *General Handoff Direction Message* that specifies a different Reverse Supplemental Code Channel assignment.

REV_DURATION - Duration of Reverse Supplemental Code Channel Assignment.

If USE_REV_DURATION is included and is set to '1', the base station shall include the field REV_DURATION and set this field to the allocated duration, in units of 80 ms, for which the mobile station may transmit on Reverse Supplemental Code Channels; otherwise the base station shall omit this field.

NUM_REV_CODES - Number of Reverse Supplemental Code Channels.

If REV_INCLUDED is included and is set to '1', the base station shall include the field NUM_REV_CODES and set this field to the number of Reverse Supplemental Code Channels which are assigned to the mobile station; otherwise the base station shall omit this field.

USE_T_ADD_ABORT - Reverse use T_ADD abort indicator.

If REV_INCLUDED is included and is set to '1', the base station shall include the field USE_T_ADD_ABORT and set this field as described below; otherwise the base station shall omit this field.

The base station shall set this field to '1' to indicate that the mobile station is to use the T_ADD Reverse Supplemental Code Channel abort feature for this reverse assignment; otherwise, the base station shall set this field to '0'.

REV_PARMS-_INCLUDED - Reverse assignment parameters included indicator.

If SUP_CHAN_PARMS_INCLUDED is set to '1', the base station shall include the field REV_PARMS_INCLUDED and set this field as described below; otherwise, the base station shall omit this field.

If the base station includes this field, it shall set this field to '1' if the following three fields are included in the message; otherwise, the base station shall set this field to '0'.

T_MULCHAN - *Supplemental Channel Request Message* pilot strength reporting offset.

If REV_PARMS_INCLUDED is included and is set to '1', the base station shall include the field T_MULCHAN and set this field as described below; otherwise the base station shall omit this field.

The base station shall set this field to the threshold offset that the mobile station is to use when reporting neighbor pilot strength measurements in a *Supplemental Channel Request Message.* The mobile station is to interpret this field as an offset to T_ADD ranging from 0.5 dB (corresponding to T_MULCHAN = '000') to 4.0 dB (corresponding to T_MULCHAN = '111'), in 0.5 dB increments.

BEGIN_PREAMBLE - Number of preamble frames on Reverse Supplemental Code Channels at the beginning of transmission on Reverse Supplemental Code Channel.

If REV_PARMS_INCLUDED is included and is set to '1', the base station shall include the field BEGIN_PREAMBLE and set this field to the number of Reverse Supplemental Code Channel preamble frames that the mobile station is to send when beginning transmission on Reverse Supplemental Code Channels; otherwise the base station shall omit this field.

RESUME_PREAMBLE - Number of preamble frames on Reverse Supplemental Code Channels at the resumption of transmission.

If REV_PARMS_INCLUDED is included and is set to '1', the base station shall include the field RESUME_PREAMBLE and set this field to the number of Reverse Supplemental Code Channel preamble frames that the mobile station is to send when resuming transmission on a Reverse Supplemental Code Channel following an autonomous suspension of transmission on an allocated Supplemental Code Channel; otherwise the base station shall omit this field.

USE_PWR_CNTL_STEP - Power control step size indicator.

The base station shall set this field to '1' if the field PWR_CNTL_STEP is included in the message.

PWR_CNTL_STEP - Power control step size.

If USE_PWR_CNTL_STEP is set to '1', then the base station shall include the field PWR_CNTL_STEP and set this field to the step size that the mobile station is to use for closed loop power control; according to Table 7.7.3.3.2.25-1; otherwise, the base station shall omit this field.

NUM_PILOTS - Number of pilots included in the message.

The base station shall set this field to the number of pilots included in the message.

The base station shall include one occurrence of the following four-part record for each of the NUM_PILOTS pilots included in the message:

PILOT_PN - Pilot PN sequence offset index.

The base station shall set this field to the pilot PN sequence offset for this pilot in units of 64 PN chips.

PWR_COMB_IND - Power control symbol combining indicator.

If the Forward Traffic Channel associated with this pilot will carry the same closed-loop power control subchannel bits as that of the previous pilot in this message, the base station shall set this field to '1'; otherwise, the base station shall set this field to '0'. The base station shall set this field to '0' in the first record in the pilot list.

FOR_FUND_CODE-_CHAN - Forward Fundamental Code Channel.

The base station shall set this field to the code channel index to be used for the Forward Fundamental Code Channel associated with this pilot.

FOR_SUP_INCLUDED - Forward Supplemental Code Channel included.

The base station shall include this field if FOR_SUP_CONFIG is included and is set to '10' or 11'. The base station shall set this field to '1' if FOR_SUP_CONFIG is set to '10' or '11' and there are Supplemental Code Channels associated with this pilot.

FOR_SUP_CHAN_REC - Forward Supplemental Code Channel record

If FOR_SUP_INCLUDED is set to '1', the base station shall include the record FOR_SUP_CHAN_REC and set its fields as described below; otherwise, the base station shall omit this record.

FOR_SUP_CHAN_REC contains information about Forward Supplemental Code Channels associated with this pilot, and consists of the field EXPL_CODE_CHAN, and either the BASE_CODE_CHAN field or NUM_FOR_SUP occurrences of the FOR_SUP_CODE_CHAN field, as shown below.

| | |
|---|---|
| EXPL_CODE_CHAN | 1 |
| BASE_CODE_CHAN | 0 or 8 |

If EXPL_CODE_CHAN is equal to '1', NUM_FOR_SUP occurrences of the following field:

| | |
|---|---|
| FOR_SUP_CODE_CHAN | 8 |

EXPL_CODE_CHAN - Explicit code channel indicator.

The base station shall set this field to '1' to indicate explicit assignment of each Forward Supplemental Code Channel by means of the field FOR_SUP_CODE_CHAN. The base station shall set this field to '0' if the mobile station is to use NUM_FOR_SUP adjacent code channels beginning with index BASE_CODE_CHAN (i.e., BASE_CODE_CHAN through BASE_CODE_CHAN + NUM_FOR_SUP - 1).

In both cases (i.e., the explicit code channel list format and range format), the order of the code channel indices is the same for all pilots specified in this message (i.e., for each pilot, the $i^{th}$ entry in the list indicates the code channel index to be used for the $i^{th}$ Forward Supplemental Code Channel associated with that pilot).

BASE_CODE_CHAN - Base code channel index.

If the EXPL_CODE_CHAN field is included and is set to '0' the base station shall include the field BASE_CODE_CHAN and set this field as described below; otherwise the base station shall omit this field.

The base station shall set this field to the base code channel index (see 7.1.3.1.8) in the range of 1 to (63 - NUM_FOR_SUP + 1), inclusive, that the mobile station is to use as the first Forward Supplemental Code Channel associated with this pilot. The mobile station is to use code channel index (BASE_CODE_CHAN + $i$ - 1), where $i$ ranges from 1 to NUM_FOR_SUP, for the $i^{th}$ Forward Supplemental Code Channel associated with this pilot.

FOR_SUP_CODE_CHAN - Forward Supplemental Code Channel.

If EXPL_CODE_CHAN is included and is set to '1, the base station shall include NUM_FOR_SUP occurrences of the field FOR_SUP_CODE_CHAN and set this field as described below; otherwise the base station shall omit this field.

The base station shall set the $i^{th}$ occurrence of this field to the code channel index (see 7.1.3.1.8), in the range 1 to 63 inclusive, that the mobile station is to use for the $i^{th}$ Forward Code Channel associated with this pilot.

RESERVED - Reserved bits.

The base station shall add reserved bits as needed in order to make the length of the entire message equal to an integer number of octets. The base station shall set each of these bits to '0'.

7.7.4 Orders

*Order Messages* are sent by the base station on the Paging Channel and on the Forward Traffic Channel. The general format used on the Paging Channel is defined in 7.7.2.3.2.7, and the general format used on the Forward Traffic Channel is defined in 7.7.3.3.2.1. There are many specific types of *Order Messages*, as shown in Table 7.7.4-1.

The base station may send on the Paging Channel any type of order shown in Table 7.7.4-1 with a 'Y' in the first column, but shall not send on the Paging Channel any type of order with an 'N' in the first column. The base station may send on the Forward Traffic Channel any type of order shown in Table 7.7.4-1 with a 'Y' in the second column, but shall not send on the Forward Traffic Channel any type of order with an 'N' in the second column.

An order consists of a 6-bit order code and zero or more order-specific fields. The base station shall set the ORDER field in the *Order Message* to the order code shown in Table 7.7.4-1 corresponding to the type of order being sent.

If the order qualification code in the fourth column of Table 7.7.4-1 is '00000000' and there are no other additional fields as shown by an 'N' in the sixth column, the base station shall include no order qualification code or other order-specific fields in the *Order Message*. The order qualification code of such a message is implicitly '00000000'.

If the order qualification code is not '00000000' and there are no other additional fields as shown in Table 7.7.4-1 by an 'N' in the sixth column, the base station shall include the order qualification code as the only order specific field in the *Order Message*.

If there are other additional fields as shown in Table 7.7.4-1 by a 'Y' in the sixth column, the base station shall include order-specific fields as specified in the corresponding subsection of this section.

**Table 7.7.4-1. Order and Order Qualification Codes Used on the Paging Channel and the Forward Traffic Channel (Part 1 of 3)**

| Paging Channel Order | Forward Traffic Channel Order | Order Code, ORDER (binary) | Order Qualification Code, ORDQ (binary) | ACTION_TIME can be specified | Additional Fields other than ORDQ | Name/Function |
|---|---|---|---|---|---|---|
| Y | N | 000001 | 00000000 | N | N | *Abbreviated Alert Order* |
| Y | Y | 000010 | 00000000 | N | Y | *Base Station Challenge Confirmation Order* (see 7.7.4.1) |
| N | Y | 000011 | 000000nn | Y | N | *Message Encryption Mode Order* (where nn is the mode per Table 7.7.2.3.2.8-2) |
| Y | N | 000100 | 00000000 | N | N | *Reorder Order* |
| N | Y | 000101 | 0000nnnn | N | N | *Parameter Update Order* (where 'nnnn' is the Request Number) |
| Y | Y | 000110 | 00000000 | N | N | *Audit Order* |
| Y | N | 001001 | 00000000 | N | N | *Intercept Order* |
| N | Y | 001010 | 00000000 | N | N | *Maintenance Order* |
| Y | Y | 010000 | 00000000 | N | N | *Base Station Acknowledgment Order* |
| N | Y | 010001 | 00000000 | N | N | *Pilot Measurement Request Order* |
| N | Y | 010001 | nnnnnnnn (in the range of 00001010 to 11111111) | N | Y | *Periodic Pilot Measurement Request Order* (see 7.7.4.6) |
| Y | Y | 010010 | 0001nnnn | N | N | *Lock Until Power-Cycled Order* (where nnnn is the lock reason) |
| Y | Y | 010010 | 0010nnnn | N | N | *Maintenance Required Order* (where nnnn is the maintenance reason) |
| Y | N | 010010 | 11111111 | N | N | *Unlock Order* |

**Table 7.7.4-1. Order and Order Qualification Codes Used on the Paging Channel and the Forward Traffic Channel (Part 2 of 3)**

| Paging Channel Order | Forward Traffic Channel Order | Order Code, ORDER (binary) | Order Qualification Code, ORDQ (binary) | ACTION_ TIME can be specified | Additional Fields other than ORDQ | Name/Function |
|---|---|---|---|---|---|---|
| N | Y | 010011 | 00000000 | Y | Y | *Service Option Request Order* (Band Class 0 only) (see 7.7.4.2) |
| N | Y | 010100 | 00000000 | Y | Y | *Service Option Response Order* (Band Class 0 only; see 7.7.4.3) |
| Y | Y | 010101 | 00000000 | N | N | *Release Order* (no reason given) |
| Y | Y | 010101 | 00000010 | N | N | *Release Order* (indicates that requested service option is rejected) |
| N | Y | 010111 | 00000000 | Y | N | *Long Code Transition Request Order* (request public) |
| N | Y | 010111 | 00000001 | Y | N | *Long Code Transition Request Order* (request private) |
| N | Y | 011001 | 0000nnnn | N | N | *Continuous DTMF Tone Order* (where the tone is designated by 'nnnn' as defined in Table 6.7.1.3.2.4-4) |
| N | Y | 011001 | 11111111 | N | N | *Continuous DTMF Tone Order* (stop continuous DTMF tone) |
| N | Y | 011010 | nnnnnnnn | N | N | *Status Request Order* (see 7.7.4.4) |
| Y | N | 011011 | 00000000 | N | N | *Registration Accepted Order* (ROAM_INDI not included; see 7.7.4.5) |

**Table 7.7.4-1. Order and Order Qualification Codes Used on the Paging Channel and the Forward Traffic Channel (Part 3 of 3)**

| Paging Channel Order | Forward Traffic Channel Order | Order Code, ORDER (binary) | Order Qualification Code, ORDQ (binary) | ACTION_TIME can be specified | Additional Fields other than ORDQ | Name/Function |
|---|---|---|---|---|---|---|
| Y | N | 011011 | 00000001 | N | N | *Registration Request Order* |
| Y | N | 011011 | 00000010 | N | N | *Registration Rejected Order* |
| Y | N | 011011 | 00000100 | N | N | *Registration Rejected Order* (delete TMSI) |
| Y | N | 011011 | 00000101 | N | Y | *Registration Accepted Order* (ROAM_INDI included; see 7.7.4.5) |
| N | Y | 011101 | nnnnnnnn | Y | N | *Service Option Control Order* (Band Class 0 only) (the specific control is designated by 'nnnnnnnn' as determined by each service option) |
| Y | Y | 011110 | nnnnnnnn | N | N | *Local Control Order* (the specific order is designated by 'nnnnnnnn' as determined by each system) |
| All other codes are reserved. | | | | | | |

7.7.4.1 Base Station Challenge Confirmation Order

The *Base Station Challenge Confirmation Order* can be sent on either the Paging Channel or on the Forward Traffic Channel. The base station shall use the following fixed-length format for the order-specific fields:

| Order Specific Field | Length (bits) |
|---|---|
| ORDQ | 8 |
| AUTHBS | 18 |
| RESERVED | 6 |

ORDQ - Order qualification code.

The base station shall set this field to '00000000'.

AUTHBS - Challenge response.

The base station shall set this field as specified in 6.3.12.1.9.

RESERVED - Reserved bits.

The base station shall set this field to '000000'.

### 7.7.4.2 Service Option Request Order

The *Service Option Request Order* can be sent only on the Forward Traffic Channel. The base station shall use the following fixed-length format for the order-specific fields:

| Order Specific Field | Length (bits) |
|---|---|
| ORDQ | 8 |
| SERVICE_OPTION | 16 |

ORDQ - Order qualification code.

The base station shall set this field to '00000000'.

SERVICE_OPTION - Service option.

The base station shall set this field to the service option code shown in TSB58-A, corresponding to the requested or alternative service option.

7.7.4.3 Service Option Response Order

The *Service Option Response Order* can be sent only on the Forward Traffic Channel. The base station shall use the following fixed-length format for the order-specific fields:

| Order Specific Field | Length (bits) |
|---|---|
| ORDQ | 8 |
| SERVICE_OPTION | 16 |

ORDQ - Order qualification code.

The base station shall set this field to '00000000'.

SERVICE_OPTION - Service option.

The base station shall set this field to the service option code shown in TSB58-A, corresponding to the accepted service option, or to '0000000000000000' to reject the last service option requested by the mobile station.

### 7.7.4.4 Status Request Order

The *Status Request Order* can be sent only on the Forward Traffic Channel. The ORDQ field of the *Status Request Order* specifies the information record to be returned by the mobile station in the *Status Message*. The base station shall use the following fixed-length format for the order-specific fields:

| Order Specific Field | Length (bits) |
|---|---|
| ORDQ | 8 |

ORDQ - Order qualification code.

The base station shall set this field to the order qualification code corresponding to the information record type to be returned by the mobile station in the *Status Message*, as shown in Table 7.7.4.4-1.

**Table 7.7.4.4-1. Status Request ORDQ Values**

| Information Record Requested | ORDQ (binary) |
|---|---|
| Reserved | 00000110 |
| Call Mode | 00000111 |
| Terminal Information | 00001000 |
| Roaming Information | 00001001 |
| Security Status | 00001010 |
| IMSI | 00001100 |
| ESN | 00001101 |
| IMSI_M | 00001110 |
| IMSI_T | 00001111 |
| All other ORDQ values are reserved. | |

7.7.4.5 Registration Accepted Order

The *Registration Accepted Order* can be sent only on the Paging Channel. The base station shall use the following variable-length format for the order-specific fields:

| Order Specific Field | Length (bits) |
|---|---|
| ORDQ | 8 |
| ROAM_INDI | 0 or 8 |

ORDQ - Order qualification code.

If ROAM_INDI is included in the order, the base station shall set this field to '00000101'; otherwise, the base station shall set this field to '00000000'.

ROAM_INDI - Roaming display indication.

If ORDQ is set to '00000000', the base station shall omit this field.

If ORDQ is set to '00000101', the base station shall include this field and shall set it to the appropriate ROAM_INDI code corresponding to the MS roaming condition. These values are defined in TSB58-A.

### 7.7.4.6 Periodic Pilot Measurement Request Order

The *Periodic Pilot Measurement Request Order* can be sent only on the Traffic Channel. The base station shall use the following fixed-length format for the order-specific fields:

| Order Specific Field | Length (bits) |
|---|---|
| ORDQ | 8 |
| MIN_PILOT_PWR_THRESH | 5 |
| MIN_PILOT_EC_IO_THRESH | 5 |
| RESERVED | 6 |

ORDQ - Order qualification code.

The base station shall set this field to a report period, in units of 0.08 seconds, in the range of '00001010' to '1111110' inclusive. The base station shall set this field to '11111111' to request a one time *Periodic Pilot Strength Measurement Message.*

MIN_PILOT_PWR-_THRESH - The threshold of the total received $E_c$ of the pilots in the Active Set.

If the mobile station is to report pilot strength measurements periodically to the base station irrespective of the pilot power of the Active Set, the base station shall set this field to '11111'; otherwise, the base station shall set this field to

$$\lceil (10 \times \log_{10}(pilot\_ec\_thresh) + 120) / 2 \rceil$$

where *pilot_ec_thresh* is the threshold of the mobile station received total $E_c$ of the pilots in the Active Set below which the mobile station is to send the pilot strength measurements periodically to the base station.

MIN_PILOT_EC-_IO_THRESH - Pilot Strength Threshold of Serving Frequency.

If the mobile station is to ignore this threshold, the base station shall set this field to '11111'; otherwise, the base station shall set this field to:

$$\lfloor - 20 \times \log_{10} pilot\_streng\_thresh \rfloor,$$

where *pilot_streng_thresh* is the threshold of the total received $E_c/I_0$ of the pilots in Active Set (see 6.6.6.2.2) below which the mobile station is to send the pilot strength measurements periodically to the base station.

RESERVED - Reserved bits.

The base station shall set this field to '000000'.

### 7.7.5 Information Records

On the Paging Channel, information records may be included in the *Feature Notification Message*. On the Forward Traffic Channel, information records may be included in the *Alert with Information Message* and the *Flash with Information Message*. Table 7.7.5-1 lists the information record type values that may be used with each message type. The following sections describe the contents of each of the record types in detail.

**Table 7.7.5-1. Information Record Types (Part 1 of 2)**

| Information Record | Record Type (binary) | Message Type | Paging Channel | Forward Traffic Channel |
|---|---|---|---|---|
| Display | 00000001 | Feature | Y | N |
| | | Alert | N | Y |
| | | Flash | N | Y |
| Called Party Number | 00000010 | Feature | Y | N |
| | | Alert | N | Y |
| | | Flash | N | Y |
| Calling Party Number | 00000011 | Feature | Y | N |
| | | Alert | N | Y |
| | | Flash | N | Y |
| Connected Number | 00000100 | Flash | N | Y |
| Signal | 00000101 | Feature | Y | N |
| | | Alert | N | Y |
| | | Flash | N | Y |
| Message Waiting | 00000110 | Feature | Y | N |
| | | Flash | N | Y |
| Service Configuration | 00000111 | Service Request | N | Y |
| | | Service Response | N | Y |
| | | Service Connect | N | Y |
| | | General Handoff Direction | N | Y |
| Called Party Subaddress | 00001000 | Feature | Y | N |
| | | Alert | N | Y |
| | | Flash | N | Y |

**Table 7.7.5-1. Information Record Types (Part 2 of 2)**

| Information Record | Record Type (binary) | Message Type | Paging Channel | Forward Traffic Channel |
|---|---|---|---|---|
| Calling Party Subaddress | 00001001 | Feature | Y | N |
| | | Alert | N | Y |
| | | Flash | N | Y |
| Connected Subaddress | 00001010 | Flash | N | Y |
| Redirecting Number | 00001011 | Feature | Y | N |
| | | Alert | N | Y |
| | | Flash | N | Y |
| Redirecting Subaddress | 00001100 | Feature | Y | N |
| | | Alert | N | Y |
| | | Flash | N | Y |
| Meter Pulses | 00001101 | Alert | N | Y |
| | | Flash | N | Y |
| Parametric Alerting | 00001110 | Feature | Y | N |
| | | Alert | N | Y |
| | | Flash | N | Y |
| Line Control | 00001111 | Alert | N | Y |
| | | Flash | N | Y |
| Extended Display | 00010000 | Feature | Y | N |
| | | Alert | N | Y |
| | | Flash | N | Y |
| Extended Record Type - International | 11111110 | Country-Specific | | |
| All other record type values are reserved. | | | | |

7.7.5.1 Display

This information record allows the network to supply display information that may be displayed by the mobile station. The base station shall use the following variable-length format for the type-specific fields:

| Type-Specific Field | Length (bits) |
|---|---|
| One or more occurrences of the following field: | |
| CHARi | 8 |

CHARi - Character.

The base station shall include one occurrence of this field for each character to be displayed. The base station shall set each occurrence of this field to the ASCII representation corresponding to the character entered, as specified in ANSI X3.4, with the most significant bit set to '0'.

7.7.5.2 Called Party Number

This information record identifies the called party's number. The base station shall use the following variable-length format for the type-specific fields:

| Type-Specific Field | Length (bits) |
|---|---|
| NUMBER_TYPE | 3 |
| NUMBER_PLAN | 4 |
| Zero or more occurrences of the following field: | |
| CHARi | 8 |
| | |
| RESERVED | 1 |

NUMBER_TYPE - Type of number.

The base station shall set this field to the NUMBER_TYPE value shown in Table 6.7.1.3.2.4-2 corresponding to the type of the called number, as defined in ANSI T1.607 §4.5.9.

NUMBER_PLAN - Numbering plan.

The base station shall set this field to the NUMBER_PLAN value shown in Table 6.7.1.3.2.4-3 corresponding to the numbering plan used for the called number, as defined in ANSI T1.607 §4.5.9.

CHARi - Character.

The base station shall include one occurrence of this field for each character in the called number. The base station shall set each occurrence of this field to the ASCII representation corresponding to the character, as specified in ANSI X3.4, with the most significant bit set to '0'.

RESERVED - Reserved bits.

The base station shall set this field to '0'.

7.7.5.3 Calling Party Number

This information record identifies the calling party's number. The base station shall use the following variable-length format for the type-specific fields:

| Type-Specific Field | Length (bits) |
|---|---|
| NUMBER_TYPE | 3 |
| NUMBER_PLAN | 4 |
| PI | 2 |
| SI | 2 |
| Zero or more occurrences of the following field: | |
| CHARi | 8 |
| RESERVED | 5 |

NUMBER_TYPE - Type of number.

The base station shall set this field to the NUMBER_TYPE value shown in Table 6.7.1.3.2.4-2 corresponding to the type of the calling number, as defined in ANSI T1.607 §4.5.9.

NUMBER_PLAN - Numbering plan.

The base station shall set this field to the NUMBER_PLAN value shown in Table 6.7.1.3.2.4-3 corresponding to the numbering plan used for the calling number, as defined in ANSI T1.607 §4.5.9.

PI - Presentation indicator.

This field indicates whether or not the calling number should be displayed.

The base station shall set this field to the PI value shown in Table 6.7.4.4-1 corresponding to the presentation indicator, as defined in ANSI T1.607 §4.5.9.

SI - Screening indicator.

This field indicates how the calling number was screened.

The base station shall set this field to the SI value shown in Table 6.7.4.4-2 corresponding to the screening indicator value, as defined in ANSI T1.607 §4.5.9.

CHARi - Character.

The base stations shall include one occurrence of this field for each character in the calling number. The base station shall set each occurrence of this field to the ASCII representation corresponding to the character, as specified in ANSI X3.4, with the most significant bit set to '0'.

RESERVED - Reserved bits.

The base station shall set this field to '00000'.

7.7.5.4 Connected Number

This information record identifies the responding party to a call. The base station shall use the following variable-length format for the type-specific fields:

| Type-Specific Field | Length (bits) |
|---|---|
| NUMBER_TYPE | 3 |
| NUMBER_PLAN | 4 |
| PI | 2 |
| SI | 2 |
| Zero or more occurrences of the following field: | |
| CHARi | 8 |
| RESERVED | 5 |

NUMBER_TYPE - Type of number.

The base station shall set this field to the NUMBER_TYPE value shown in Table 6.7.1.3.2.4-2 corresponding to the type of the connected number, as defined in ANSI T1.607 §4.5.9.

NUMBER_PLAN - Numbering plan.

The base station shall set this field to the NUMBER_PLAN value shown in Table 6.7.1.3.2.4-3 corresponding to the numbering plan used for the connected number, as defined in ANSI T1.607 §4.5.9.

PI - Presentation indicator.

This field indicates whether or not the connected number should be displayed.

The base station shall set this field to the PI value shown in Table 6.7.4.4-1 corresponding to the presentation indicator, as defined in ANSI T1.607 §4.5.9.

SI - Screening indicator.

This field indicates how the connected number was screened.

The base station shall set this field to the SI value shown in Table 6.7.4.4-2 corresponding to the screening indicator value, as defined in ANSI T1.607 §4.5.9.

CHARi - Character.

The base station shall include one occurrence of this field for each character in the connected number. The base station shall set each occurrence of this field to the ASCII representation corresponding to the character, as specified in ANSI X3.4, with the most significant bit set to '0'.

RESERVED - Reserved bits.

The base station shall set this field to '00000'.

#### 7.7.5.5 Signal

This information record allows the network to convey information to a user by means of tones and other alerting signals.

The Standard Alert is defined as SIGNAL_TYPE = '10', ALERT_PITCH = '00' and SIGNAL = '000001'.

The base station shall use the following fixed-length format for the type-specific fields:

| Type-Specific Field | Length (bits) |
|---|---|
| SIGNAL_TYPE | 2 |
| ALERT_PITCH | 2 |
| SIGNAL | 6 |
| RESERVED | 6 |

SIGNAL_TYPE - Signal type.

The base station shall set this field to the signal type value shown in Table 7.7.5.5-1.

**Table 7.7.5.5-1. Signal Type**

| Description | SIGNAL_TYPE (binary) |
|---|---|
| Tone signal | 00 |
| ISDN Alerting | 01 |
| IS-54B Alerting | 10 |
| Reserved | 11 |

ALERT_PITCH - Pitch of the alerting signal.

This field is ignored unless SIGNAL_TYPE is '10', IS-54B Alerting.

If SIGNAL_TYPE is '10', the base station shall set this field to the alert pitch shown in Table 7.7.5.5-2; otherwise, the base station shall set this field to '00'.

**Table 7.7.5.5-2. Alert Pitch**

| Description | ALERT_PITCH (binary) |
|---|---|
| Medium pitch (standard alert) | 00 |
| High pitch | 01 |
| Low pitch | 10 |
| Reserved | 11 |

SIGNAL - Signal code.

The base station shall set this field to the specific signal desired. If SIGNAL_TYPE is '00', the base station shall set this field as described in Table 7.7.5.5-3. If SIGNAL_TYPE is '01', the base station shall set this field as described in Table 7.7.5.5-4. If SIGNAL_TYPE is '10', the base station shall set this field as described in Table 7.7.5.5-5.

**Table 7.7.5.5-3. Tone Signals (SIGNAL_TYPE = '00')**

| Description | SIGNAL (binary) |
|---|---|
| Dial tone on: a continuous 350 Hz tone added to a 440 Hz tone. | 000000 |
| Ring back tone on: a 440 Hz tone added to a 480 Hz tone repeated in a 2 s on, 4 s off pattern. | 000001 |
| Intercept tone on: alternating 440 Hz and 620 Hz tones, each on for 250 ms. | 000010 |
| Abbreviated intercept: alternating 440 Hz and 620 Hz tones, each on for 250 ms, repeated for four seconds. | 000011 |
| Network congestion (reorder) tone on: a 480 Hz tone added to a 620 Hz tone repeated in a 250 ms on, 250 ms off cycle. | 000100 |
| Abbreviated network congestion (reorder): a 480 Hz tone added to a 620 Hz tone repeated in a 250 ms on, 250 ms off cycle for four seconds. | 000101 |
| Busy tone on: a 480 Hz tone added to a 620 Hz tone repeated in a 500 ms on, 500 ms off cycle. | 000110 |
| Confirm tone on: a 350 Hz tone added to a 440 Hz tone repeated 3 times in a 100 ms on, 100 ms off cycle. | 000111 |
| Answer tone on: answer tone is not presently used in North American networks. | 001000 |
| Call waiting tone on: a 300 ms burst of 440 Hz tone. | 001001 |
| Pip tone on: four bursts of 480 Hz tone (0.1 s on, 0.1 s off). | 001010 |
| Tones off | 111111 |
| All other SIGNAL values are reserved | |

Table 7.7.5.5-4. ISDN Alerting (SIGNAL_TYPE = '01')

| Description | SIGNAL (binary) |
|---|---|
| Normal Alerting: 2.0 s on, 4.0 s off, repeating | 000000 |
| Intergroup Alerting: 0.8 s on, 0.4 s off, 0.8 s on, 4.0 s off, repeating | 000001 |
| Special/Priority Alerting: 0.4 s on, 0.2 s off, 0.4 s on, 0.2 s off, 0.8 s on, 4.0 s off, repeating | 000010 |
| Reserved (ISDN Alerting pattern 3) | 000011 |
| "Ping ring": single burst of 500 ms | 000100 |
| Reserved (ISDN Alerting pattern 5) | 000101 |
| Reserved (ISDN Alerting pattern 6) | 000110 |
| Reserved (ISDN Alerting pattern 7) | 000111 |
| Alerting off | 001111 |
| All other SIGNAL values are reserved | |

**Table 7.7.5.5-5. IS-54B Alerting (SIGNAL_TYPE = '10')**

| Description | SIGNAL (binary) |
|---|---|
| *No Tone:* Off | 000000 |
| *Long:* 2.0 s on, 4.0 s off, repeating (standard alert) | 000001 |
| *Short-Short:* 0.8 s on, 0.4 s off, 0.8 s on, 4.0 s off, repeating | 000010 |
| *Short-Short-Long:* 0.4 s on, 0.2 s off, 0.4 s on, 0.2 s off, 0.8 s on, 4.0 s off, repeating | 000011 |
| *Short-Short-2:* 1.0 s on, 1.0 s off, 1.0 s on, 3.0 s off, repeating. | 000100 |
| *Short-Long-Short:* 0.5 s on, 0.5 s off, 1.0 s on, 0.5 s off, 0.5 s on, 3.0 s off, repeating. | 000101 |
| *Short-Short-Short-Short:* 0.5 s on, 0.5 s off, 0.5 s on, 0.5 s off, 0.5 s on, 0.5 s off, 0.5 s on, 2.5 s off, repeating. | 000110 |
| *PBX Long:* 1.0 s on, 2.0 s off, repeating. | 000111 |
| *PBX Short-Short:* 0.4 s on, 0.2 s off, 0.4 s on, 2.0 off, repeating. | 001000 |
| *PBX Short-Short-Long:* 0.4 s on, 0.2 s off, 0.4 s on, 0.2 s off, 0.8 s on, 1.0 s off, repeating. | 001001 |
| *PBX Short-Long-Short:* 0.4 s on, 0.2 s off, 0.8 s on, 0.2 s off, 0.4 s on, 1.0 s off, repeating. | 001010 |
| *PBX Short-Short-Short-Short:* 0.4 s on, 0.2 s off, 0.4 s on, 0.2 s off, 0.4 s on, 0.2 s off, 0.4 s on, 0.8 s off, repeating. | 001011 |
| *Pip-Pip-Pip-Pip:* 0.1 s on, 0.1 s off, 0.1 s on, 0.1 s off, 0.1 s on, 0.1 s off, 0.1 s on. | 001100 |
| All other SIGNAL values are reserved | |

RESERVED - Reserved bits.

The base station shall set this field to '000000'.

7.7.5.6 Message Waiting

This information record conveys to the user the number of messages waiting. The base station shall use the following fixed-length format for the type-specific fields:

| Type-Specific Field | Length (bits) |
|---|---|
| MSG_COUNT | 8 |

MSG_COUNT - Number of waiting messages.

The base station shall set this field to the number of messages waiting.

7.7.5.7 Service Configuration

This record is included in a *Service Request Message* and a *Service Response Message* to propose a service configuration, and in a *Service Connect Message* and a *General Handoff Direction Message* to specify an actual service configuration to be used.

The base station shall use the following variable-length format for the type-specific fields:

| Type-Specific Field | Length (bits) |
|---|---|
| FOR_MUX_OPTION | 16 |
| REV_MUX_OPTION | 16 |
| FOR_RATES | 8 |
| REV_RATES | 8 |
| NUM_CON_REC | 8 |
| NUM_CON_REC occurrences of the following record | |
| RECORD_LEN | 8 |
| CON_REF | 8 |
| SERVICE_OPTION | 16 |
| FOR_TRAFFIC | 4 |
| REV_TRAFFIC | 4 |

FOR_MUX_OPTION - Forward Traffic Channel multiplex option.

For a *Service Request Message* or a *Service Response Message*, the base station shall set this field to the number of the Forward Traffic Channel multiplex option of the proposed service configuration.

For a *Service Connect Message*, the base station shall set this field to the number of the Forward Traffic Channel multiplex option of the actual service configuration to be used.

REV_MUX_OPTION - Reverse Traffic Channel multiplex option.

For a *Service Request Message* or a *Service Response Message*, the base station shall set this field to the number of the Reverse Traffic Channel multiplex option of the proposed service configuration.

For a *Service Connect Message*, the base station shall set this field to the number of the Reverse Traffic Channel multiplex option of the actual service configuration to be used.

FOR_RATES - Transmission rates of the Forward Fundamental Code Channel.

The base station shall set this field to the Forward Fundamental Code Channel transmission rates specified in 6.7.4.17 for the specified Forward Traffic Channel multiplex option.

For a *Service Request Message* and a *Service Response Message*, the base station shall set the subfields corresponding to the Forward Fundamental Code Channel transmission rates of the proposed service configuration to '1', and shall set the remaining subfields to '0'. The base station shall set RESERVED to '0000'.

For a *Service Connect Message*, the base station shall set the subfields corresponding to the Forward Fundamental Code Channel transmission rates of the actual service configuration to be used to '1', and shall set the remaining subfields to '0'. The base station shall set RESERVED to '0000'.

REV_RATES - Transmission rates of the Reverse Fundamental Code Channel.

The base station shall set this field to the Reverse Fundamental Code Channel transmission rates specified in 6.7.4.17 for the specified Reverse Traffic Channel multiplex option.

For a *Service Request Message* and a *Service Response Message*, the base station shall set the subfields corresponding to the Reverse Fundamental Code Channel transmission rates of the proposed service configuration to '1', and shall set the remaining subfields to '0'. The base station shall set RESERVED to '0000'.

For a *Service Connect Message*, the base station shall set the subfields corresponding to the Reverse Fundamental Code Channel transmission rates of the actual service configuration to be used to '1', and shall set the remaining subfields to '0'. The base station shall set RESERVED to '0000'.

NUM_CON_REC - Number of service option connection records.

The base station shall set this field to the number of service option connection records included in the message.

For a *Service Request Message* and a *Service Response Message*, the base station shall include one occurrence of the following five-field record for each service option connection of the proposed service configuration.

For a *Service Connect Message*, the base station shall include one occurrence of the following five-field record for each service option connection of the actual service configuration to be used.

For a *General Handoff Direction Message*, the base station may include one occurrence of the following five-field record for each service option connection of the actual service configuration to be used.

RECORD_LEN - Service option connection record length.

The base station shall set this field to the number of octets included in this service option connection record.

CON_REF - Service option connection reference.

For a *Service Request Message* and a *Service Response Message*: if the service option connection is part of the current service configuration, the base station shall set this field to the service option connection reference; otherwise, the base station shall set this field to '00000000'.

For a *Service Connect Message*, the base station shall set this field to the service option connection reference assigned to the service option connection.

SERVICE_OPTION - Service option.

The base station shall set this field to the service option to be used with the service option connection.

FOR_TRAFFIC - Forward Traffic Channel traffic type.

The base station shall set this field to the FOR_TRAFFIC code shown in Table 7.7.5.7-1 corresponding to the Forward Traffic Channel traffic type to be used with the service option connection.

**Table 7.7.5.7-1. FOR_TRAFFIC Codes**

| FOR_TRAFFIC (binary) | Description |
|---|---|
| 0000 | The service option connection does not use Forward Traffic Channel traffic. |
| 0001 | The service option connection uses primary traffic on the Forward Traffic Channel. |
| 0010 | The service option connection uses secondary traffic on the Forward Traffic Channel. |
| All other FOR_TRAFFIC codes are reserved. | |

REV_TRAFFIC - Reverse Traffic Channel traffic type.

The base station shall set this field to the REV_TRAFFIC code shown in Table 7.7.5.7-2 corresponding to the Reverse Traffic Channel traffic type to be used with the service option connection.

**Table 7.7.5.7-2. REV_TRAFFIC Codes**

| REV_TRAFFIC (binary) | Description |
|---|---|
| 0000 | The service option connection does not use Reverse Traffic Channel traffic. |
| 0001 | The service option connection uses primary traffic on the Reverse Traffic Channel. |
| 0010 | The service option connection uses secondary traffic on the Reverse Traffic Channel. |
| All other REV_TRAFFIC codes are reserved. | |

### 7.7.5.8 Called Party Subadddress

This information record identifies the called party subaddress. The base station shall use the following variable-length format for the type-specific fields:

| Type-Specific Field | Length (bits) |
|---|---|
| EXTENSION_BIT | 1 |
| SUBADDRESS_TYPE | 3 |
| ODD/EVEN_INDICATOR | 1 |
| RESERVED | 3 |
| Zero or more occurrences of the following field: | |
| CHARi | 8 |

EXTENSION_BIT - The extension bit.

The mobile station shall set this field to '1'.

SUBADDRESS_TYPE - Type of subaddress.

The base station shall set this field to the SUBADDRESS_TYPE value shown in Table 6.7.4.19-1 corresponding to the type of the subaddress, as defined in ANSI T1.607 §4.5.8.

ODD/EVEN_INDICATOR - The indicator of odd/even bits.

The base station shall set this field to the ODD/ value shown in Table 6.7.4.19-2 corresponding to the indicator of even/odd bits, as defined in ANSI T1.607 §4.5.8. It is only used when the type of subaddress is "User specified" and the coding is BCD.

RESERVED - Reserved bits.

The base station shall set this field to '000'.

CHARi - Character.

The base station shall include one occurrence of this field for each character in the called party subaddress.

When the SUBADDRESS_TYPE field is equal to '000', the NSAP address shall be encoded using the preferred binary encoding specified in CCITT Recommendation X.213 or ISO 8348 AD2.

When the SUBADDRESS_TYPE field is set to '010', user-specified subaddress field is encoded according to the user specification, subject to a maximum length of 20 octets. When interworking with CCITT Recommendation X.25 networks, BCD coding should be applied.

7.7.5.9 Calling Party Subadddress

This information record identifies the calling party subaddress. The base station shall use the following variable-length format for the type-specific fields:

| Type-Specific Field | Length (bits) |
|---|---|
| EXTENSION_BIT | 1 |
| SUBADDRESS_TYPE | 3 |
| ODD/EVEN_INDICATOR | 1 |
| RESERVED | 3 |
| Zero or more occurrences of the following field: | |
| CHARi | 8 |

EXTENSION_BIT - The extension bit.

The base station shall set this field to '1'.

SUBADDRESS_TYPE - Type of subaddress.

The base station shall set this field to the SUBADDRESS_TYPE value shown in Table 6.7.4.19-1 corresponding to the type of the subaddress, as defined in ANSI T1.607 §4.5.10.

ODD/EVEN INDICATOR - The indicator of odd/even bits.

The base station shall set this field to the ODD/EVEN_INDICATOR value shown in Table 6.7.4.19-2 corresponding to the indicator of even/odd bits, as defined in ANSI T1.607 §4.5.10. It is only used when the type of subaddress is "User specified" and the coding is BCD.

RESERVED - Reserved bits.

The base station shall set this field to '000'.

CHARi - Character.

The base station shall include one occurrence of this field for each character in the calling party subaddress.

When the SUBADDRESS_TYPE field is equal to '000', the NSAP address shall be encoded using the preferred binary encoding specified in CCITT Recommendation X.213 or ISO 8348 AD2.

When the SUBADDRESS_TYPE field is set to '010', user-specified subaddress field is encoded according to the user specification, subject to a maximum length of 20 octets. When interworking with CCITT Recommendation X.25 networks, BCD coding should be applied.

7.7.5.10 Connected Subadddress

This information record identifies the subaddress of the responding party. The base station shall use the following variable-length format for the type-specific fields:

| Type-Specific Field | Length (bits) |
|---|---|
| EXTENSION_BIT | 1 |
| SUBADDRESS_TYPE | 3 |
| ODD/EVEN_INDICATOR | 1 |
| RESERVED | 3 |
| Zero or more occurrences of the following field: | |
| CHARi | 8 |

EXTENSION_BIT - The extension bit.

The base station shall set this field to '1'.

SUBADDRESS_TYPE - Type of subaddress.

The base station shall set this field to the SUBADDRESS_TYPE value shown in Table 6.7.4.19-1 corresponding to the type of the subaddress, as defined in ANSI T1.607 §4.5.14.

ODD/EVEN INDICATOR - The indicator of odd/even bits.

The base station shall set this field to the ODD/EVEN_INDICATOR value shown in Table 6.7.4.19-2 corresponding to the indicator of even/odd bits, as defined in ANSI T1.607 §4.5.14. It is only used when the type of subaddress is "User specified" and the coding is BCD.

RESERVED - Reserved bits.

The base station shall set this field to '000'.

CHARi - Character.

The base station shall include one occurrence of this field for each character in the connected subaddress.

When the SUBADDRESS_TYPE field is equal to '000', the NSAP address shall be encoded using the preferred binary encoding specified in CCITT Recommendation X.213 or ISO 8348 AD2.

When the SUBADDRESS_TYPE field is set to '010', user-specified subaddress field is encoded according to the user specification, subject to a maximum length of 20 octets. When interworking with CCITT Recommendation X.25 networks, BCD coding should be applied.

7.7.5.11 Redirecting Number

This information record identifies the Redirecting Number. The base station shall use the following variable-length format for the type-specific fields:

| Type-Specific Field | Length (bits) |
|---|---|
| EXTENSION_BIT_1 | 1 |
| NUMBER_TYPE | 3 |
| NUMBER_PLAN | 4 |
| EXTENSION_BIT_2 | 0 or 1 |
| PI | 0 or 2 |
| RESERVED | 0 or 3 |
| SI | 0 or 2 |
| EXTENSION_BIT_3 | 0 or 1 |
| RESERVED | 0 or 3 |
| REDIRECTION_REASON | 0 or 4 |
| Zero or more occurrences of the following field: | |
| CHARi | 8 |

EXTENSION_BIT_1 - The extension bit.

If the PI and SI are included in this record, the base station shall set this field to '0'. Otherwise, the base station shall set this field to '1'.

NUMBER_TYPE - Type of number.

The base station shall set this field to the NUMBER_TYPE value shown in Table 6.7.1.3.2.4-2 corresponding to the type of the redirecting number, as defined in ANSI T1.625 §6.1.3.7.

NUMBER_PLAN - Numbering plan.

The base station shall set this field to the NUMBER_PLAN value shown in Table 6.7.1.3.2.4-3 corresponding to the numbering plan used for the redirecting number, as defined in ANSI T1.625 §6.1.3.7.

EXTENSION_BIT_2 - The extension bit.

If the EXTENSION_BIT_1 is set to '0' and REDIRECTION_REASON is included in this record, the base station shall set this field to '0'. If the EXTENSION_BIT_1 is set to '0' and REDIRECTION_REASON is not included in this record, the base station shall set this field to '1'. If the EXTENSION_BIT_1 is set to '1', the base station shall omit this field.

PI - Presentation indicator.

This field indicates whether or not the redirecting number should be displayed.

if the EXTENSION_BIT_1 is set to '0', the base station shall set this field to the PI value shown in Table 6.7.4.4-1 corresponding to the presentation indicator, as defined in ANSI T1.625 §6.1.3.7; otherwise, the base station shall omit this field.

RESERVED - Reserved bits.

If the EXTENSION_BIT_1 is set to '0', the base station shall set this field to '000'; otherwise, the base station shall omit this field.

SI - Screening indicator.

This field indicates how the redirecting number was screened.

If the EXTENSION_BIT_1 is set to '0', the base station shall set this field to the SI value shown in Table 6.7.4.4-2 corresponding to the screening indicator value, as defined in ANSI T1.625 6.1.3.7; otherwise, the base station shall omit this field.

EXTENSION_BIT_3 - The extension bit.

If the EXTENSION_BIT_2 is set to '0', the base station shall set this field to '1'; otherwise, the base station shall omit this field.

RESERVED - Reserved bits.

If the EXTENSION_BIT_2 is set to '0', the base station shall set this field to '000'; otherwise, the base station shall omit this field.

REDIRECTION_REASON - The reason for redirection.

If the EXTENSION_BIT_2 is set to '0', the base station shall set this field to the REDIRECTION_REASON value shown in Table 7.7.5.x5-1 corresponding to the redirection reason, as defined in ANSI T1.625 6.1.3.7; otherwise, the base station shall omit this field.

**Table 7.7.5.11-1. Redirection Reason**

| Description | REDIRECTION-REASON (binary) |
|---|---|
| Unknown | 0000 |
| Call forwarding busy or called DTE busy | 0001 |
| Call forwarding no reply (circuit-mode only) | 0010 |
| Called DTE out of order (packet-mode only) | 1001 |
| Call forwarding by the called DTE (packet-mode only) | 1010 |
| Call forwarding unconditional or Systematic call redirection | 1111 |
| Reserved | others |

CHARi - Character.

The base stations shall include one occurrence of this field for each character in the Redirecting Number. The base station shall set each occurrence of this field to the ASCII representation corresponding to the character, as specified in ANSI X3.4, with the most significant bit set to '0'.

### 7.7.5.12 Redirecting Subadddress

This information record identifies the subaddress of the responding party. The base station shall use the following variable-length format for the type-specific fields:

| Type-Specific Field | Length (bits) |
|---|---|
| EXTENSION_BIT | 1 |
| SUBADDRESS_TYPE | 3 |
| ODD/EVEN_INDICATOR | 1 |
| RESERVED | 3 |
| Zero or more occurrences of the following field: | |
| CHARi | 8 |

EXTENSION_BIT - The extension bit.

The base station shall set this field to '1'.

SUBADDRESS_TYPE - Type of subaddress.

The base station shall set this field to the SUBADDRESS_TYPE value shown in Table 6.7.4.19-1 corresponding to the type of the subaddress, as defined in ANSI T1.625 §6.1.3.8.

ODD/EVEN INDICATOR - The indicator of odd /even bits.

The base station shall set this field to the ODD/EVEN_INDICATOR value shown in Table 6.7.4.19-2 corresponding to the indicator of even/odd bits, as defined in ANSI T1.625 §6.1.3.8. It is only used when the type of subaddress is "User specified" and the coding is BCD.

RESERVED - Reserved bits.

The base station shall set this field to '000'.

CHARi - Character.

The base station shall include one occurrence of this field for each character in the redirecting subaddress.

When the SUBADDRESS_TYPE field is equal to '000', the NSAP address shall be encoded using the preferred binary encoding specified in CCITT Recommendation X.213 or ISO 8348 AD2.

When the SUBADDRESS_TYPE field is set to '010', user-specified subaddress field is encoded according to the user specification, subject to a maximum length of 20 octets. When interworking with CCITT Recommendation X.25 networks, BCD coding should be applied.

7.7.5.13 Meter Pulses

This information record identifies the number of meter pulses and frequency of the alert tone. The base station shall use the following fixed-length format for the type-specific fields:

| Type-Specific Field | Length (bits) |
|---|---|
| PULSE_FREQUENCY | 11 |
| PULSE_ON_TIME | 8 |
| PULSE_OFF_TIME | 8 |
| PULSE_COUNT | 4 |
| RESERVED | 1 |

PULSE_FREQUENCY - Pulse frequency.

The base station shall set this field to the frequency of the alert signals in units of 10 Hz or to zero to indicate that line polarity control is to be used. If this field is set to zero, the PULSE_ON_TIME and PULSE_OFF_TIME shall be the period of line polarity reversal and normal line polarity, respectively.

PULSE_ON_TIME - Pulse on time.

The base station shall set this field to the period of the meter pulses in units of 5 ms.

PULSE_OFF_TIME - Pulse off time.

The base station shall set this field to the period of the inter-pulse spacing in units of 5 ms.

PULSE_COUNT - Pulse count.

The base station shall set this field to the number of meter pulses.

RESERVED - Reserved bits.

The base station shall set this field to '0'.

7.7.5.14 Parametric Alerting

This information record allows the network to convey information to a user by means of programmable alerting signals.

The base station shall use the following variable-length format for the type-specific fields:

| Type-Specific Field | Length (bits) |
|---|---|
| CADENCE_COUNT | 8 |
| NUM_GROUPS | 4 |
| NUM_GROUPS occurrences of the following record: | |
| AMPLITUDE | 8 |
| FREQ_1 | 10 |
| FREQ_2 | 10 |
| ON_TIME | 8 |
| OFF_TIME | 8 |
| REPEAT | 4 |
| DELAY | 8 |
| | |
| RESERVED | 4 |

CADENCE_COUNT - Cadence count.

The base station shall set this field to the number of times the cadence of tone groups will be generated between 0x01 and 0xFE. The base station shall set this field to 0x00 to indicate that the mobile station should end alert tone generation. The base station shall set this field to 0xFF to indicate that the cadence will repeat indefinitely.

NUM_GROUPS - Number of groups.

The base station shall set this field to the number of groups.

AMPLITUDE - Amplitude.

The base station shall set this field to the amplitude level of the tone group in units of -1 dBm.

FREQ_1 - Tone frequency 1.

The base station shall set this field to the first frequency of the tone group in units of 5 Hz.

FREQ_2 - Tone frequency 2.

The base station shall set this field to the second frequency of the tone group in units of 5 Hz. Setting this field to zero creates a single frequency tone.

ON_TIME - On time.

The base station shall set this field to the duration of the tone group in units of 50 ms.

OFF_TIME - Off time.

The base station shall set this field to the duration of the spacing between tones in units of 50 ms.

REPEAT - Repeat.

The base station shall set this field to the number of times the tone group should repeat. The base station shall set this field to 0xFF to indicate that the tone group will repeat indefinitely.

DELAY - Delay.

The base station shall set this field to the length of time before the next tone group begins in units of 50 ms.

RESERVED - Reserved bits.

The base station shall set this field to '0000'.

### 7.7.5.15 Line Control

This information record allows the network to convey line control information.

The base station shall use the following variable-length format for the type-specific fields:

| Type-Specific Field | Length (bits) |
|---|---|
| POLARITY_INCLUDED | 1 |
| TOGGLE_MODE | 0 or 1 |
| REVERSE_POLARITY | 0 or 1 |
| POWER_DENIAL_TIME | 8 |
| RESERVED | 0 - 7 (as needed) |

POLARITY_INCLUDED - Polarity parameter included.

If the mobile station is to change the line polarity, the base station shall set this field to '1'; otherwise, the base station shall set this field to '0'.

TOGGLE_MODE - If POLARITY_INCLUDED is set to '1', the base station shall include this field and set it to '1' to toggle the line polarity or to '0' to set the polarity to the absolute value indicated in the REVERSE_POLARITY field.

REVERSE_POLARITY - Reverse polarity.

If POLARITY_INCLUDED is set to '1' and TOGGLE_MODE is equal to '0', the base station shall include this field and set it to '1' to reverse the tip and ring polarity or to '0' to use normal polarity. If POLARITY_INCLUDED is set to '1' and TOGGLE_MODE is set to '1', the base station shall include this field and set it to '0'; otherwise, the base station shall omit this field.

POWER_DENIAL_TIME - Power denial timeout.

The base station shall include this field and set it to the duration of the power denial in increments of 5 ms.

RESERVED - Reserved bits.

The base station shall add reserved bits as needed in order to make the length of the entire message equal to an integer number of octets. The base station shall set these bits to '0'.

7.7.5.16 Extended Display

This information record allows the network to supply supplementary service display information that may be displayed by the mobile station. The base station shall use the following variable-length format for the type-specific fields:

| Type-Specific Field | Length (bits) |
|---|---|
| EXT_DISPLAY_IND | 1 |
| DISPLAY_TYPE | 7 |
| One or more occurrences of the following record: | |
| DISPLAY_TAG | 8 |
| DISPLAY_LEN | 8 |
| DISPLAY_LEN occurrences of the following field if the DISPLAY_TAG field is not equal to '10000000' or '10000001': | |
| CHARi | 8 |

EXT_DISPLAY_IND - The indicator of Extended Display Information record.

The base station shall set this field to '1'.

DISPLAY_TYPE - The type of display.

The base station shall set this field to the DISPLAY_TYPE value shown in Table 7.7.5.16-1 corresponding to the type of display, as defined in ANSI T1.610 Annex D.

**Table 7.7.5.16-1. Display Type**

| Description | DISPLAY_TYPE (binary) |
|---|---|
| Normal | 0000000 |
| All other DISPLAY_TYPE values are reserved. | |

DISPLAY_TAG - The indicator of the display information.

There are three types of display tags: mandatory control tags (Blank and Skip), display text tags, and optional control tags, see ANSI T1.610 Annex D.

The base station shall set this field to the DISPLAY_TAG value shown in Table 7.7.5.16-2 corresponding to the type of information contained in the following CHARi field, as defined in ANSI T1.610 Annex D.

**Table 7.7.5.16-2. Mandatory Control Tags and Display Text Tags**

| Description | DISPLAY_TAG (binary) |
|---|---|
| Blank | 10000000 |
| Skip | 10000001 |
| Continuation | 10000010 |
| Called Address | 10000011 |
| Cause | 10000100 |
| Progress Indicator | 10000101 |
| Notification Indicator | 10000110 |
| Prompt | 10000111 |
| Accumulated Digits | 10001000 |
| Status | 10001001 |
| Inband | 10001010 |
| Calling Address | 10001011 |
| Reason | 10001100 |
| Calling Party Name | 10001101 |
| Called Party Name | 10001110 |
| Original Called Name | 10001111 |
| Redirecting Name | 10010000 |
| Connected Name | 10010001 |
| Originating Restrictions | 10010010 |
| Date & Time of Day | 10010011 |
| Call Appearance ID | 10010100 |
| Feature Address | 10010101 |
| Redirection Name | 10010110 |
| Redirection Number | 10010111 |
| Redirecting Number | 10011000 |
| Original Called Number | 10011001 |
| Connected Number | 10011010 |
| Text (e.g., ASCII) | 10011110 |

DISPLAY_LEN - The display length.

The base station shall set this field to the number of octets of display text. See ANSI T1.610 Annex D.

CHARi - Character.

The base station shall include DISPLAY_LEN occurrences of this field, one for each character to be displayed, except for blank and skip. The base station shall set each occurrence of this field to the ASCII representation corresponding to the character entered, as specified in ANSI X3.4, with the most significant bit set to '0'.

### 7.7.5.17 Extended Record Type - International

The use of this record type is country-specific. The first ten bits of the type-specific fields shall include the Mobile Country Code (MCC) associated with the national standards organization administering the use of the record type. Encoding of the MCC shall be as specified in 6.3.1.3. The remaining six bits of the first two octets of the type-specific fields shall be used to specify the country-specific record type.

No text.

# ANNEX A MESSAGE ENCRYPTION AND VOICE PRIVACY

This annex forms part of this Standard and is normative.

This annex and any modifications to this annex are available as a separate document whose distribution is controlled by TIA.

No text.

# ANNEX B CDMA CALL FLOW EXAMPLES

This is an informative annex which contains examples of call flow. The diagrams follow these conventions:

- All messages are received without error
- Receipt of messages is not shown except in the handoff examples
- Acknowledgments are not shown
- Optional authentication procedures are not shown
- Optional private long code transitions are not shown

| Mobile Station | | Base Station |
|---|---|---|
| • Detects user-initiated call.<br>• Sends *Origination Message.* | > Access Channel > | • Sets up Traffic Channel.<br>• Begins sending null Traffic Channel data. |
| • Sets up Traffic Channel. | < Paging Channel < | • Sends *Channel Assignment Message.* |
| • Receives $N_{5m}$ consecutive valid frames. | | |
| • Begins sending the Traffic Channel preamble. | | • Acquires the Reverse Traffic Channel. |
| • Begins transmitting null Traffic Channel data. | < Forward Traffic Channel < | • Sends *Base Station Acknowledgment Order.* |
| • Begins processing primary traffic in accordance with Service Option 1. | < Forward Traffic Channel < | • Sends *Service Option Response Order.* |
| Optional<br>• Sends *Origination Continuation Message.* | > Reverse Traffic Channel > | Optional |
| Optional<br>• Applies ring back in audio path. | < Forward Traffic Channel < | Optional<br>• Sends *Alert With Information Message* (ring back tone). |
| Optional<br>• Removes ring back from audio path.<br>*(User conversation)* | < Forward Traffic Channel < | Optional<br>• Sends *Alert With Information Message* (tones off).<br>*(User conversation)* |

**Figure B-1A. Simple Call Flow, Mobile Station Origination Example Using Service Option Negotiation with Service Option 1**

| Mobile Station | | | | Base Station |
|---|---|---|---|---|
| • Detects user-initiated call. | | | | |
| • Sends *Origination Message.* | > | Access Channel | > | • Sets up Traffic Channel. |
| | | | | • Begins sending null Traffic Channel data. |
| • Sets up Traffic Channel. | < | Paging Channel | < | • Sends *Channel Assignment Message.* |
| • Receives $N_{5m}$ consecutive valid frames. | | | | |
| • Begins sending the Traffic Channel preamble. | | | | • Acquires the Reverse Traffic Channel. |
| • Begins transmitting null Traffic Channel data. | < | Forward Traffic Channel | < | • Sends *Base Station Acknowledgment Order.* |
| • Begins processing primary traffic in accordance with Service Option 1. | < | Forward Traffic Channel | < | • Sends *Service Connect Message.* |
| • Sends *Service Connect Completion Message.* | > | Reverse Traffic Channel | > | |
| Optional | | | | Optional |
| • Sends *Origination Continuation Message.* | > | Reverse Traffic Channel | > | |
| Optional | | | | Optional |
| • Applies ring back in audio path. | < | Forward Traffic Channel | < | • Sends *Alert With Information Message* (ring back tone). |
| Optional | | | | Optional |
| • Removes ring back from audio path. | < | Forward Traffic Channel | < | • Sends *Alert With Information Message* (tones off). |
| *(User conversation)* | | | | *(User conversation)* |

**Figure B-1B. Simple Call Flow, Mobile Station Origination Example Using Service Negotiation with Service Option 1**

| Mobile Station | | | | Base Station |
|---|---|---|---|---|
| | < | Paging Channel | < | • Sends *General Page Message*. |
| • Sends *Page Response Message*. | > | Access Channel | > | • Sets up Traffic Channel.<br>• Begins sending null Traffic Channel data. |
| • Sets up Traffic Channel. | < | Paging Channel | < | • Sends *Channel Assignment Message*. |
| • Receives $N_{5m}$ consecutive valid frames. | | | | |
| • Begins sending the Traffic Channel preamble. | | | | • Acquires the Reverse Traffic Channel. |
| • Begins transmitting null Traffic Channel data. | < | Forward Traffic Channel | < | • Sends *Base Station Acknowledgment Order*. |
| • Begins processing primary traffic in accordance with Service Option 1. | < | Forward Traffic Channel | < | • Sends *Service Option Response Order*. |
| • Starts ringing. | < | Forward Traffic Channel | < | • Sends *Alert With Information Message* (ring). |
| • User answers call. | | | | |
| • Stops ringing. | | | | |
| • Sends *Connect Order*. | > | Reverse Traffic Channel | > | |
| • Begins sending primary traffic packets from the Service Option 1 application. | | | | |
| *(User conversation)* | | | | *(User conversation)* |

**Figure B-2A. Simple Call Flow, Mobile Station Termination Example Using Service Option Negotiation with Service Option 1**

| Mobile Station | | | | Base Station |
|---|---|---|---|---|
| | < | Paging Channel | < | • Sends *General Page Message*. |
| • Sends *Page Response Message*. | > | Access Channel | > | • Sets up Traffic Channel.<br>• Begins sending null Traffic Channel data. |
| • Sets up Traffic Channel. | < | Paging Channel | < | • Sends *Channel Assignment Message*. |
| • Receives $N_{5m}$ consecutive valid frames. | | | | |
| • Begins sending the Traffic Channel preamble. | | | | • Acquires the Reverse Traffic Channel. |
| • Begins transmitting null Traffic Channel data. | < | Forward Traffic Channel | < | • Sends *Base Station Acknowledgment Order*. |
| • Begins processing primary traffic in accordance with Service Option 1. | < | Forward Traffic Channel | < | • Sends *Service Connect Message*. |
| • Sends *Service Connect Completion Message*. | > | Reverse Traffic Channel | > | |
| • Starts ringing. | < | Forward Traffic Channel | < | • Sends *Alert With Information Message* (ring). |
| • User answers call. | | | | |
| • Stops ringing. | | | | |
| • Sends *Connect Order*. | > | Reverse Traffic Channel | > | |
| • Begins sending primary traffic packets from the Service Option 1 application. | | | | |
| *(User conversation)* | | | | *(User conversation)* |

**Figure B-2B. Simple Call Flow, Mobile Station Termination Example Using Service Negotiation with Service Option 1**

| Mobile Station | | Base Station |
|---|---|---|
| • Detects user-initiated disconnect.<br>• Sends *Release Order*. | > Reverse Traffic Channel > | |
| | < Forward Traffic Channel < | • Sends *Release Order*. |
| • Enters the *System Determination Substate* of the *Mobile Station Initialization State*. | | |

**Figure B-3. Simple Call Flow, Mobile Station Initiated Call Disconnect Example**

| Mobile Station | | Base Station |
|---|---|---|
| | < Forward Traffic Channel < | • Detects call disconnect.<br>• Sends *Release Order*. |
| • Sends *Release Order*. | > Reverse Traffic Channel > | |
| • Enters the *System Determination Substate* of the *Mobile Station Initialization State*. | | |

**Figure B-4. Simple Call Flow, Base Station Initiated Call Disconnect Example**

| Mobile Station | | | | Base Station |
|---|---|---|---|---|
| *(User conversation)*<br>• Detects request for third party to be added to conversation.<br>• Sends *Flash With Information Message* (dialed digits). | > | Reverse Traffic Channel | > | *(User conversation)*<br>• MSC mutes speech. |
| Optional<br>• Applies ring back in audio path. | < | Forward Traffic Channel | < | Optional<br>• Sends *Alert With Information Message* (ring back tone).<br>*(Called party answers)* |
| Optional<br>• Removes ring back tone from audio path. | < | Forward Traffic Channel | < | Optional<br>• Sends *Alert With Information Message* (tones off).<br>• MSC unmutes speech from added party. |
| *(Two-way conversation with added party; original party held)*<br>• Detects user request to establish three-way conversation.<br>• Sends *Flash With Information Message*.<br>*(Three-way conversation)* | > | Reverse Traffic Channel | > | *(Two-way conversation with added party; original party held)*<br>• MSC reconnects original party.<br>*(Three-way conversation)* |

**Figure B-5. Simple Call Flow, Three-Party Calling Example**

| Mobile Station | | | | Base Station |
|---|---|---|---|---|
| *(User conversation with first party)* | | | | *(User conversation with first party)*<br>• Detects incoming call. |
| Optional<br>• Applies call waiting tone in audio path. | < | Forward Traffic Channel | < | Optional<br>• Sends *Alert or Flash With Information Message* (call waiting tone). |
| • Detects user request to change parties.<br>• Sends *Flash With Information Message.* | > | Reverse Traffic Channel | > | • MSC mutes speech path to first party, connects second party. |
| *(User conversation with second party; first party held)*<br>• Detects user request to change parties.<br>• Sends *Flash With Information Message.* | > | Reverse Traffic Channel | > | *(User conversation with second party; first party held)*<br>• MSC mutes speech path to second party, connects first party. |
| *(User conversation with first party; second party held)* | | | | *(User conversation with first party; second party held)* |

**Figure B-6. Simple Call Flow, Call-Waiting Example**

Figure B-7 illustrates call processing operations during a soft handoff from base station A to base station B. Figure B-8 illustrates call processing operations during a sequential soft handoff in which the mobile station is transferred from a pair of base stations A and B through a pair of base stations B and C to base station C.

| Mobile Station | | | | Base Station |
|---|---|---|---|---|
| *(User conversation using A)* | | | | *(User conversation using A)* |
| • Pilot B strength exceeds T_ADD. | | | | |
| • Sends *Pilot Strength Measurement Message.* | > | Reverse Traffic Channel | > | • A receives *Pilot Strength Measurement Message.* |
| | | | | • B begins transmitting traffic on the Forward Traffic Channel and acquires the Reverse Traffic Channel. |
| • Receives *Handoff Direction Message.* | < | Forward Traffic Channel | < | • A and B send *Handoff Direction Message* to use A and B. |
| • Acquires B; begins using Active Set {A,B}. | | | | |
| • Sends *Handoff Completion Message.* | > | Reverse Traffic Channel | > | • A and B receive *Handoff Completion Message.* |
| • Handoff drop timer of pilot A expires. | | | | |
| • Sends *Pilot Strength Measurement Message.* | > | Reverse Traffic Channel | > | • A and B receive *Pilot Strength Measurement Message.* |
| • Receives *Handoff Direction Message.* | < | Forward Traffic Channel | < | • A and B send *Handoff Direction Message* to use B only. |
| • Stops diversity combining; begins using Active Set {B}. | | | | |
| • Sends *Handoff Completion Message.* | > | Reverse Traffic Channel | > | • A and B receive *Handoff Completion Message.* |
| | | | | • A stops transmitting on the Forward Traffic Channel and receiving on the Reverse Traffic Channel. |
| *(User conversation using B)* | | | | *(User conversation using B)* |

**Figure B-7. Call Processing During Soft Handoff**

| Mobile Station | | Base Station |
| --- | --- | --- |
| *(User conversation using A and B)* | | *(User conversation using A and B)* |
| • Handoff drop timer of pilot A expires and pilot C strength exceeds T_ADD. | | |
| • Sends *Pilot Strength Measurement Message.* | > Reverse Traffic Channel > | • A and B receive *Pilot Strength Measurement Message*, determine that new Active Set should contain B and C. |
| | | • C begins transmitting traffic on the Forward Traffic Channel and acquires the Reverse Traffic Channel. |
| • Receives *Handoff Direction Message.* | < Forward Traffic Channel < | • A, B, and C send *Handoff Direction Message* to use B and C. |
| • Stops diversity combining A and B; starts diversity combining B and C. | | |
| • Sends *Handoff Completion Message.* | > Reverse Traffic Channel > | • A, B, and C receive *Handoff Completion Message.* |
| | | • A stops transmitting on the Forward Traffic Channel and receiving on the Reverse Traffic Channel. |
| • Handoff drop timer of pilot B expires. | | |
| • Sends *Pilot Strength Measurement Message.* | > Reverse Traffic Channel > | • B and C receive *Pilot Strength Measurement Message.* |
| *(Continued on next page)* | | *(Continued on next page)* |

**Figure B-8. Call Processing During Sequential Soft Handoff (Part 1 of 2)**

| Mobile Station | | Base Station |
|---|---|---|
| *(Continued from previous page)* | | *(Continued from previous page)* |
| • Receives *Handoff Direction Message*. | < Forward Traffic Channel < | • B and C send *Handoff Direction Message* to use C only. |
| • Stops diversity combining; begins using Active Set {C}. | | |
| • Sends *Handoff Completion Message*. | > Reverse Traffic Channel > | • B and C receive *Handoff Completion Message*.<br>• B stops transmitting on the Forward Traffic Channel and receiving on the Reverse Traffic Channel. |
| *(User conversation using C)* | | *(User conversation using C)* |

**Figure B-8. Call Processing During Sequential Soft Handoff (Part 2 of 2)**

| Mobile Station | | | | Base Station |
|---|---|---|---|---|
| • User initiates priority call. | | | | |
| • Sends *Origination Message*. | > | Access Channel | > | • Determines that no Traffic Channels are available and that call is a priority call. |
| • Indicates to user that priority call has been queued as a PACA call, and indicates queue position.<br>Uses non-slotted mode operation while waiting for channel assignment. | < | Paging Channel | < | • Sends *PACA Message* to inform user that priority call has been queued as a PACA call, and to indicate queue position. |
| • Indicates updated queue position to user. | < | Paging Channel | < | • Sends *PACA Message* periodically to update PACA call queue position. |
| | < | Paging Channel | < | • Sends *PACA Message* to instruct mobile station to re-originate PACA call. |
| • Sends *Origination Message* again. | > | Access Channel | > | • Sets up Traffic Channel. |
| • Indicates to user that PACA call is proceeding, sets up Traffic Channel. | < | Paging Channel | < | • Sends *Channel Assignment Message.* |
| • Receives $N_{5m}$ consecutive valid frames. | | | | |
| • Begins sending Traffic Channel preamble. | | | | • Acquires the Reverse Traffic Channel. |
| • Begins transmitting null Traffic Channel data. | < | Forward Traffic Channel | < | • Sends *Base Station Acknowledgment Order.* |
| • Begins processing primary traffic in accordance with Service Option 1. | < | Forward Traffic Channel | < | • Sends *Service Connect Message.* |
| • Sends *Service Connect Completion Message.* | > | Reverse Traffic Channel | > | |
| *(Continued on next page)* | | | | *(Continued on next page)* |

**Figure B-9. PACA Call Processing (Part 1 of 2)**

| Mobile Station | | Base Station |
|---|---|---|
| *(Continued from previous page)* | | *(Continued from previous page)* |
| Optional<br>• Sends *Origination Continuation Message.* | > Reverse Traffic Channel > | Optional |
| • Alerts user with distinct PACA alert. | < Forward Traffic Channel < | • Sends *Alert With Information Message* (distinct PACA alert). |
| • User answers call.<br>• Stops alerting.<br>• Sends *Connect Order.* | > Reverse Traffic Channel > | • Dials out PACA call. |
| Optional<br>• Applies ring back in audio path. | < Forward Traffic Channel < | Optional<br>• Sends *Alert With Information Message* (ring back tone). |
| Optional<br>• Removes ring back from audio path. | < Forward Traffic Channel < | Optional<br>• Sends *Alert With Information Message* (tones off). |
| *(User conversation)* | | *(User conversation)* |

**Figure B-9. PACA Call Processing (Part 2 of 2)**

Figure B-10 illustrates call processing operations for failure recovery for hard handoff on the same frequency. Figure B-11 illustrates call flow for failure recovery for inter-frequency handoff when the mobile station does not search the Candidate Frequency. Figures B-12 and B-13 show the call flow for mobile-assisted inter-frequency handoff (handoff preceded by searching of the Candidate Frequency Search Set by the mobile station), where the search is started by using the *Candidate Frequency Search Control Message*. Figures B-14 and B-15 illustrate call flow for inter-frequency handoff when failure recovery also includes searching the Candidate Frequency Search Set. In the periodic search examples (Figures B-13 and B-15), it is assumed that the mobile station performs a search of the Candidate Frequency Search Set in a single visit to the Candidate Frequency. Figures B-16 and B-17 illustrate the interaction of inter-frequency handoff operations with an ongoing periodic search of the Candidate Frequency Search Set.

| Mobile Station | | Base Station |
|---|---|---|
| *(Serving Frequency = F1)* | | *(Serving Frequency = F1)* |
| | | *(Decides to hand off mobile station to new Active Set)* |
| | | *(Starts transmitting on Forward Traffic Channel corresponding to target Active Set)* |
| • Receives *General Handoff Direction Message*. Saves current configuration. Discontinues use of serving Active Set. | < Forward Traffic Channel < | • Sends *General Handoff Direction Message* (target Active Set disjoint from serving Active Set; RETURN_IF_HO_FAIL = '1'; Target Frequency = F1). |
| | | *(Maintains Forward and Reverse Traffic Channels corresponding to serving Active Set)* |
| • Attempts to hand off to target Active Set. | | |
| *(Handoff attempt fails)* | | |
| • Restores old configuration. Resumes use of serving Active Set. | | |
| • Sends *Candidate Frequency Search Report Message* reporting pilots in target Active Set. | > Reverse Traffic Channel > | • Receives *Candidate Frequency Search Report Message*. |
| | | *(Discontinues use of target Active Set)* |
| *(Continues communication using serving Active Set)* | | *(Continues communication using serving Active Set)* |

**Figure B-10. Call Flow for Same Frequency Hard Handoff Failure Recovery**

| Mobile Station | | Base Station |
|---|---|---|
| *(Serving Frequency = F1)* | | *(Serving Frequency = F1)* |
| *(Candidate Frequency Search Set is empty)* | | *(Decides to hand off mobile station to Active Set on F2)*<br>*(Starts transmitting on Forward Traffic Channel on F2)* |
| • Receives *General Handoff Direction Message*.<br>Saves current configuration.<br>Discontinues use of serving Active Set. | < Forward Traffic Channel on F1 < | • Sends *General Handoff Direction Message* (target Active Set; RETURN_IF_HO_FAIL = '1'; Target Frequency = F2). |
| | | *(Maintains Forward and Reverse Traffic Channels on F1)* |
| • Tunes to F2.<br>Attempts to hand off to target Active Set. | | |
| *(Handoff attempt fails)* | | |
| • Re-tunes to F1.<br>Restores old configuration.<br>Resumes use of serving Active Set. | | |
| • Sends *Candidate Frequency Search Report Message* reporting pilots in target Active Set. | > Reverse Traffic Channel on F1 > | • Receives *Candidate Frequency Search Report Message*. |
| | | *(Discontinues use of Active Set on F2)* |
| *(Continues communication on F1)* | | *(Continues communication on F1)* |

**Figure B-11. Call Flow for Inter-Frequency Hard Handoff Failure Recovery without Search**

| Mobile Station | | Base Station |
|---|---|---|
| *(Serving Frequency = F1)* | | *(Serving Frequency = F1)* |
| • Receives *Candidate Frequency Search Request Message*. | < Forward Traffic Channel on F1 < | • Sends *Candidate Frequency Search Request Message* (non-empty Search Set; Candidate Frequency = F2). |
| • Computes search time for Candidate Frequency Search Set. | | |
| Sends *Candidate Frequency Search Response Message*. | > Reverse Traffic Channel on F1 > | • Receives *Candidate Frequency Search Response Message*. |
| | | *(Decides to initiate single search)* |
| • Receives *Candidate Frequency Search Control Message*. | < Forward Traffic Channel on F1 < | • Sends *Candidate Frequency Search Control Message* (perform single search; Candidate Frequency = F2). |
| • Saves current configuration. Discontinues use of serving Active Set. | | |
| • Tunes to F2. | | |
| • Searches pilots in Candidate Frequency Search Set. | | |
| • Re-tunes to F1. Restores old configuration. Resumes use of serving Active Set. | | |
| • Sends *Candidate Frequency Search Report Message* reporting pilots in Candidate Frequency Search Set above CF_T_ADD. | > Reverse Traffic Channel on F1 > | • Receives *Candidate Frequency Search Report Message*. |
| *(Continues communication on F1)* | | *(Continues communication on F1)* |
| *(Continued on next page)* | | *(Continued on next page)* |

**Figure B-12. Call Flow for Inter-Frequency Handoff (Single Search Using Candidate Frequency Search Control Message) (Part 1 of 2)**

| Mobile Station | | Base Station |
|---|---|---|
| *(Continued from previous page)* | | *(Continued from previous page)* |
| | | *(Decides to hand off mobile station to Active Set on F2)* |
| | | *(Starts transmitting on Forward Traffic Channel on F2)* |
| • Receives *General Handoff Direction Message*. Saves current configuration. Discontinues use of serving Active Set. | < Forward Traffic Channel on F1 < | • Sends *General Handoff Direction Message* (RETURN_IF_HO_FAIL = '1'; Target Frequency = F2). |
| | | *(Maintains Forward and Reverse Traffic Channels on F1)* |
| • Tunes to F2. Attempts to hand off to target Active Set. | | |
| *(Handoff attempt succeeds)* | | |
| *(Starts transmitting on Reverse Traffic Channel on F2)* | | *(Starts receiving on Reverse Traffic Channel on F2)* |
| • Sends *Handoff Completion Message*. | > Reverse Traffic Channel on F2 > | • Receives *Handoff Completion Message*. |
| | | *(Discontinues use of Active Set on F1)* |
| *(Continues communication on F2)* | | *(Continues communication on F2)* |

**Figure B-12. Call Flow for Inter-Frequency Handoff (Single Search Using Candidate Frequency Search Control Message) (Part 2 of 2)**

| Mobile Station | | Base Station |
|---|---|---|
| *(Serving Frequency = F1)* | | *(Serving Frequency = F1)* |
| • Receives *Candidate Frequency Search Request Message.* | < Forward Traffic Channel on F1 < | • Sends *Candidate Frequency Search Request Message* (non-empty Search Set; Candidate Frequency = F2). |
| • Computes search time for Candidate Frequency Search Set.<br>Sends *Candidate Frequency Search Response Message.* | > Reverse Traffic Channel on F1 > | • Receives *Candidate Frequency Search Response Message.* |
| | | *(Decides to initiate periodic search)* |
| • Receives *Candidate Frequency Search Control Message.*<br>Initializes and enables periodic search timer. | < Forward Traffic Channel on F1 < | • Sends *Candidate Frequency Search Control Message* (start periodic search; Candidate Frequency = F2). |
| *(Periodic search timer running)* | | |
| • Performs a search of Candidate Frequency Search Set by executing the following actions before periodic search timer expires:<br>– Saves current configuration. Discontinues use of serving Active Set.<br>– Tunes to F2.<br>– Searches pilots in Candidate Frequency Search Set. | | |
| *(Continued on next page)* | | *(Continued on next page)* |

**Figure B-13. Call Flow for Inter-Frequency Handoff (Periodic Search Using Candidate Frequency Search Control Message) (Part 1 of 3)**

| Mobile Station | | Base Station |
|---|---|---|
| *(Continued from previous page)* | | *(Continued from previous page)* |
| – Re-tunes to F1. Restores old configuration. Resumes use of serving Active Set. | | |
| – Sends *Candidate Frequency Search Report Message* reporting pilots in Candidate Frequency Search Set above CF_T_ADD. | > Reverse Traffic Channel on F1 > | • Receives *Candidate Frequency Search Report Message.* |
| *(Continues communication on F1)* | | *(Continues communication on F1)* |
| *(Periodic search timer expires)*<br>• Initializes and enables periodic search timer. | | |
| *(Continues periodic search on F2 by repeating the search described above, once every search period)* | | |
| | | *(Decides to hand off mobile station to Active Set on F2)*<br>*(Starts transmitting on Forward Traffic Channel on F2)* |
| *(Continued on next page)* | | *(Continued on next page)* |

**Figure B-13. Call Flow for Inter-Frequency Handoff (Periodic Search Using Candidate Frequency Search Control Message) (Part 2 of 3)**

| Mobile Station | | Base Station |
|---|---|---|
| *(Continued from previous page)* | | *(Continued from previous page)* |
| • Receives *General Handoff Direction Message.*<br>Disables periodic search timer.<br>Saves current configuration.<br>Discontinues use of serving Active Set. | < Forward Traffic Channel on F1 < | • Sends *General Handoff Direction Message* (RETURN_IF_HO_FAIL = '1'; Target Frequency = F2).<br>*(Maintains Forward and Reverse Traffic Channels on F1)* |
| • Tunes to F2.<br>Attempts to hand off to target Active Set. | | |
| *(Handoff attempt succeeds)* | | |
| *(Starts transmitting on Reverse Traffic Channel on F2)* | | *(Starts receiving on Reverse Traffic Channel on F2)* |
| • Sends *Handoff Completion Message.* | > Reverse Traffic Channel on F2 > | • Receives *Handoff Completion Message.*<br>*(Discontinues use of Active Set on F1)* |
| *(Continues communication on F2)* | | *(Continues communication on F2)* |

**Figure B-13. Call Flow for Inter-Frequency Handoff (Periodic Search Using Candidate Frequency Search Control Message) (Part 3 of 3)**

| Mobile Station | | Base Station |
| --- | --- | --- |
| *(Serving Frequency = F1)* | | *(Serving Frequency = F1)* |
| • Receives *Candidate Frequency Search Request Message.* | < Forward Traffic Channel on F1 < | • Sends *Candidate Frequency Search Request Message* (non-empty Search Set; Candidate Frequency = F2). |
| • Computes search time for Candidate Frequency Search Set. | | |
| Sends *Candidate Frequency Search Response Message.* | > Reverse Traffic Channel on F1 > | • Receives *Candidate Frequency Search Response Message.* |
| | | *(Decides to hand off mobile station to Active Set on F2)*<br>*(Starts transmitting on Forward Traffic Channel on F2)* |
| • Receives *General Handoff Direction Message.*<br>Saves current configuration.<br>Discontinues use of serving Active Set. | < Forward Traffic Channel on F1 < | • Sends *General Handoff Direction Message* (target Active Set; RETURN_IF_HO_FAIL = '1'; PERIODIC_SEARCH = '0'; Target Frequency = F2).<br>*(Maintains Forward and Reverse Traffic Channels on F1)* |
| • Tunes to F2.<br>Attempts to hand off to target Active Set.<br>*(Handoff attempt fails)*<br>• Searches pilots in Candidate Frequency Search Set. | | |
| *(Continued on next page)* | | *(Continued on next page)* |

**Figure B-14. Call Flow for Inter-Frequency Handoff (Single Search Using General Handoff Direction Message) (Part 1 of 3)**

| Mobile Station | | Base Station |
|---|---|---|
| *(Continued from previous page)* | | *(Continued from previous page)* |
| • Re-tunes to F1.<br>Restores old configuration.<br>Resumes use of serving Active Set. | | |
| • Sends *Candidate Frequency Search Report Message* reporting pilots in target Active Set and pilots in Candidate Frequency Search Set above CF_T_ADD. | > Reverse Traffic Channel on F1 > | • Receives *Candidate Frequency Search Report Message.*<br>*(Discontinues use of Active Set on F2)* |
| *(Continues communication on F1)* | | *(Continues communication on F1)* |
| | | *(Decides to hand off mobile station to new Active Set on F2)*<br>*(Starts transmitting on Forward Traffic Channel on F2)* |
| • Saves current configuration.<br>Discontinues use of serving Active Set. | < Forward Traffic Channel on F1 < | • Sends *General Handoff Direction Message* (new target Active Set; RETURN_IF_HO_FAIL = '1'; Target Frequency = F2).<br>*(Maintains Forward and Reverse Traffic Channels on F1)* |
| • Tunes to F2.<br>Attempts to hand off to target Active Set.<br>*(Handoff attempt succeeds)* | | |
| *(Continued on next page)* | | *(Continued on next page)* |

**Figure B-14. Call Flow for Inter-Frequency Handoff (Single Search Using General Handoff Direction Message) (Part 2 of 3)**

| Mobile Station | | | | Base Station |
|---|---|---|---|---|
| *(Continued from previous page)* | | | | *(Continued from previous page)* |
| *(Starts transmitting on Reverse Traffic Channel on F2)* | | | | *(Starts receiving on Reverse Traffic Channel on F2)* |
| • Sends *Handoff Completion Message.* | > | Reverse Traffic Channel on F2 | > | • Receives *Handoff Completion Message.* |
| | | | | *(Discontinues use of Active Set on F1)* |
| *(Continues communication on F2)* | | | | *(Continues communication on F2)* |

**Figure B-14. Call Flow for Inter-Frequency Handoff (Single Search Using General Handoff Direction Message) (Part 3 of 3)**

| Mobile Station | | | | Base Station |
|---|---|---|---|---|
| *(Serving Frequency = F1)* | | | | *(Serving Frequency = F1)* |
| • Receives *Candidate Frequency Search Request Message.* | < | Forward Traffic Channel on F1 | < | • Sends *Candidate Frequency Search Request Message* (non-empty Search Set; Candidate Frequency = F2). |
| • Computes search time for Candidate Frequency Search Set. | | | | |
| Sends *Candidate Frequency Search Response Message.* | > | Reverse Traffic Channel on F1 | > | • Receives *Candidate Frequency Search Response Message.* |
| | | | | *(Decides to hand off mobile station to Active Set on F2)* |
| | | | | *(Starts transmitting on Forward Traffic Channel on F2)* |
| • Receives *General Handoff Direction Message.* Saves current configuration. Discontinues use of serving Active Set. | < | Forward Traffic Channel on F1 | < | • Sends *General Handoff Direction Message* (target Active Set; RETURN_IF_HO_FAIL = '1'; PERIODIC_SEARCH = '1'; Target Frequency = F2). |
| | | | | *(Maintains Forward and Reverse Traffic Channels on F1)* |
| • Tunes to F2. Attempts to hand off to target Active Set. | | | | |
| *(Handoff attempt fails)* | | | | |
| • Searches pilots in Candidate Frequency Search Set. | | | | |
| • Re-tunes to F1. Restores old configuration. Resumes use of serving Active Set. | | | | |
| *(Continued on next page)* | | | | *(Continued on next page)* |

**Figure B-15. Call Flow for Inter-Frequency Handoff (Periodic Search Using General Handoff Direction Message) (Part 1 of 4)**

| Mobile Station | | Base Station |
|---|---|---|
| *(Continued from previous page)* | | *(Continued from previous page)* |
| • Sends *Candidate Frequency Search Report Message* reporting pilots in target Active Set and pilots in Candidate Frequency Search Set above CF_T_ADD.<br>• Initializes and enables periodic search timer. | > Reverse Traffic Channel on F1 > | • *Receives Candidate Frequency Search Report Message.*<br>*(Discontinues use of Active Set on F2)* |
| *(Continues communication on F1)*<br>*(Periodic search timer running)* | | *(Continues communication on F1)* |
| • Performs a search of Candidate Frequency Search Set by executing the following actions before periodic search timer expires:<br>– Saves current configuration. Discontinues use of serving Active Set.<br>– Tunes to F2.<br>– Searches pilots in Candidate Frequency Search Set.<br>– Re-tunes to F1. Restores old configuration. Resumes use of serving Active Set. | | |
| *(Continued on next page)* | | *(Continued on next page)* |

**Figure B-15. Call Flow for Inter-Frequency Handoff (Periodic Search Using General Handoff Direction Message) (Part 2 of 4)**

| **Mobile Station** | | **Base Station** |
|---|---|---|
| *(Continued from previous page)* | | *(Continued from previous page)* |
| – Sends *Candidate Frequency Search Report Message* reporting pilots in Candidate Frequency Search Set above CF_T_ADD. | > Reverse Traffic Channel on F1 > | • Receives *Candidate Frequency Search Report Message.* |
| *(Continues communication on F1)* | | *(Continues communication on F1)* |
| *(Periodic search timer expires)* | | |
| • Initializes and enables periodic search timer. | | |
| *(Continues periodic search on F2 by repeating the search described above, once every search period)* | | |
| | | *(Decides to hand off mobile station to new Active Set on F2)* |
| | | *(Starts transmitting on Forward Traffic Channel on F2)* |
| • Receives *General Handoff Direction Message.*<br>Disables periodic search timer.<br>Saves current configuration.<br>Discontinues use of serving Active Set. | < Forward Traffic Channel on F1 < | • Sends *General Handoff Direction Message*<br>(new target Active Set;<br>RETURN_IF_HO_FAIL = '1';<br>Target Frequency = F2). |
| | | *(Maintains Forward and Reverse Traffic Channels on F1)* |
| • Tunes to F2.<br>Attempts to hand off to target Active Set. | | |
| *(Continued on next page)* | | *(Continued on next page)* |

**Figure B-15. Call Flow for Inter-Frequency Handoff (Periodic Search Using General Handoff Direction Message) (Part 3 of 4)**

| Mobile Station | | Base Station |
|---|---|---|
| *(Continued from previous page)* | | *(Continued from previous page)* |
| *(Handoff attempt succeeds)* | | |
| *(Starts transmitting on Reverse Traffic Channel on F2)* | | *(Starts receiving on Reverse Traffic Channel on F2)* |
| • Sends *Handoff Completion Message*. | > Reverse Traffic Channel on F2 > | • *Receives Handoff Completion Message*. |
| | | *(Discontinues use of Active Set on F1)* |
| *(Continues communication on F2)* | | *(Continues communication on F2)* |

**Figure B-15. Call Flow for Inter-Frequency Handoff (Periodic Search Using General Handoff Direction Message) (Part 4 of 4)**

| Mobile Station | | | | Base Station |
|---|---|---|---|---|
| *(Serving Frequency = F1)* | | | | *(Serving Frequency = F1)* |
| • Receives *Candidate Frequency Search Request Message.* | < | Forward Traffic Channel on F1 | < | • Sends *Candidate Frequency Search Request Message* (non-empty Search Set; Candidate Frequency = F2). |
| • Computes search time for Candidate Frequency Search Set.<br>Sends *Candidate Frequency Search Response Message.* | > | Reverse Traffic Channel on F1 | > | • Receives *Candidate Frequency Search Response Message.* |
| | | | | *(Decides to initiate periodic search)* |
| • Receives *Candidate Frequency Search Control Message.*<br>Initializes and enables periodic search timer. | < | Forward Traffic Channel on F1 | < | • Sends *Candidate Frequency Search Control Message* (start periodic search; Candidate Frequency = F2). |
| *(Performs periodic search on F2)* | | | | |
| | | | | *(Decides to hand off mobile station to Active Set on F3)*<br>*(Starts transmitting on Forward Traffic Channel on F3)* |
| *(Continued on next page)* | | | | *(Continued on next page)* |

**Figure B-16. Call Flow for Periodic Search on F2 from F1, Failed Handoff Attempt to F3, Continued Periodic Search of F2 from F1 (Part 1 of 3)**

| Mobile Station | | Base Station |
|---|---|---|
| *(Continued from previous page)* | | *(Continued from previous page)* |
| • Receives *General Handoff Direction Message*.<br>Disables periodic search timer.<br>Saves current configuration.<br>Discontinues use of serving Active Set. | < Forward Traffic Channel on F1 < | • Sends *General Handoff Direction Message* (target Active Set; RETURN_IF_HO_FAIL = '1'; PERIODIC_SEARCH = '1'; Target Frequency = F3).<br>*(Maintains Forward and Reverse Traffic Channels on F1)* |
| • Tunes to F3.<br>Attempts to hand off to target Active Set. | | |
| *(Handoff attempt fails)*<br>• Re-tunes to F1.<br>Restores old configuration.<br>Resumes use of serving Active Set.<br>Initializes and enables periodic search timer. | | |
| *(Continued on next page)* | | *(Continued on next page)* |

**Figure B-16. Call Flow for Periodic Search on F2 from F1, Failed Handoff Attempt to F3, Continued Periodic Search of F2 from F1 (Part 2 of 3)**

| Mobile Station | | Base Station |
|---|---|---|
| *(Continued from previous page)* | | *(Continued from previous page)* |
| • Sends *Candidate Frequency Search Report Message* reporting pilots in target Active Set. | > Reverse Traffic Channel on F1 > | • Receives *Candidate Frequency Search Report Message.* |
| | | *(Discontinues use of Active Set on F3)* |
| *(Continues communication on F1)* | | *(Continues communication on F1)* |
| . | | |
| . | | |
| *(Performs periodic search on F2)* | | |
| . | | |
| . | | |
| *(Continues communication on F1)* | | |

**Figure B-16. Call Flow for Periodic Search on F2 from F1, Failed Handoff Attempt to F3, Continued Periodic Search of F2 from F1 (Part 3 of 3)**

| Mobile Station | | Base Station |
|---|---|---|
| *(Serving Frequency = F1)* | | *(Serving Frequency = F1)* |
| • Receives *Candidate Frequency Search Request Message.* | < Forward Traffic Channel on F1 < | • Sends *Candidate Frequency Search Request Message* (non-empty Search Set; Candidate Frequency = F2). |
| • Computes search time for Candidate Frequency Search Set. | | |
| Sends *Candidate Frequency Search Response Message.* | > Reverse Traffic Channel on F1 > | • Receives *Candidate Frequency Search Response Message.* |
| | | *(Decides to initiate periodic search)* |
| • Receives *Candidate Frequency Search Control Message.* Initializes and enables periodic search timer. | < Forward Traffic Channel on F1 < | • Sends *Candidate Frequency Search Control Message* (start periodic search; Candidate Frequency = F2). |
| . | | |
| . | | |
| *(Performs periodic search on F2)* | | |
| . | | *(Decides to hand off mobile station to Active Set on F3)* |
| . | | *(Starts transmitting on Forward Traffic Channel on F3)* |
| . | | |
| • Receives *General Handoff Direction Message.* Disables periodic search timer. Saves current configuration. Discontinues use of serving Active Set. | < Forward Traffic Channel on F1 < | • Sends *General Handoff Direction Message* (target Active Set; RETURN_IF_HO_FAIL = '1'; PERIODIC_SEARCH = '1'; Target Frequency = F3). |
| | | *(Maintains Forward and Reverse Traffic Channels on F1)* |
| *(Continued on next page)* | | *(Continued on next page)* |

**Figure B-17. Call Flow for Periodic Search on F2 from F1, Successful Handoff to F3, Continued Periodic Search on F2 from F3 (Part 1 of 2)**

| Mobile Station | | Base Station |
|---|---|---|
| *(Continued from previous page)* | | *(Continued from previous page)* |
| • Tunes to F3.<br>Attempts to hand off to target Active Set. | | |
| *(Handoff attempt succeeds)* | | |
| *(Starts transmitting on Reverse Traffic Channel on F3)* | | *(Starts receiving on Reverse Traffic Channel on F3)* |
| • Sends *Handoff Completion Message.*<br>Initializes and enables periodic search timer. | > Reverse Traffic Channel on F3 > | • Receives *Handoff Completion Message.*<br>*(Discontinues use of Active Set on F1)* |
| *(Continues communication on F3)* | | *(Continues communication on F3)* |
| . | | |
| . | | |
| *(Performs periodic search on F2)* | | |
| . | | |
| . | | |
| *(Continues communication on F3)* | | |

**Figure B-17. Call Flow for Periodic Search on F2 from F1, Successful Handoff to F3, Continued Periodic Search on F2 from F3 (Part 2 of 2)**

| Mobile Station | | | | Base Station |
|---|---|---|---|---|
| • Packet arrives. | | | | |
| • Sends *Origination Message* with "High Speed Packet Service Option." | > | Access Channel | > | • Sets up Traffic Channel. |
| | | | | • Begins sending null Traffic Channel data. |
| • Sets up Traffic Channel. | < | Paging Channel | < | • Sends *Channel Assignment Message* (GRANTED_MODE = '01'). |
| • Receives $N_{5m}$ consecutive valid frames. | | | | |
| • Begins sending the Traffic Channel preamble. | | | | • Acquires the Reverse Traffic Channel. |
| • Begins transmitting null Traffic Channel data. | < | Forward Traffic Channel | < | • Sends *Base Station Acknowledgment Order*. |
| • Sends *Service Request Message* (FOR_MUX_OPTION and REV_MUX_OPTION indicates max number of Supplemental Code Channels). | > | Reverse Traffic Channel | > | |
| • Begins processing primary traffic in accordance with Service Option n. | < | Forward Traffic Channel | < | • Sends *Service Connect Message*. |
| • Sends *Service Connect Completion Message*. | > | Reverse Traffic Channel | > | |
| • Sends packet. | > | Reverse Fundamental Code Channel | > | |
| | < | Forward Fundamental Code Channel | < | • Sends packet. |
| *(Continued on next page)* | | | | *(Continued on next page)* |

**Figure B-18. Simple Call Flow Mobile Station Origination Example with Transmission on Forward Supplemental Code Channels (Part 1 of 2)**

| Mobile Station | | Base Station |
|---|---|---|
| *(Continued from previous page)* | | *(Continued from previous page)* |
| | | • Base station decides that it requires to change the number of Supplemental Channels (e.g., it has a "large" packet to send). |
| | < Forward Fundamental Code Channel < | • Send *Supplemental Channel Assignment Message.* |
| | < Forward Fundamental and Supplemental Code Channels < | • Begin transmitting on the Supplemental Code Channels for the duration specified in *Supplemental Channel Assignment Message.* |
| *(User traffic)* | | *(User traffic)* |

**Figure B-18. Simple Call Flow Mobile Station Origination Example with Transmission on Forward Supplemental Code Channels (Part 2 of 2)**

| Mobile Station | | | | Base Station |
|---|---|---|---|---|
| • Packet arrives. | | | | |
| • Sends *Origination Message* with "High Speed Packet Service Option." | > | Access Channel | > | • Sets up Traffic Channel. |
| | | | | • Begins sending null Traffic Channel data. |
| • Sets up Traffic Channel. | < | Paging Channel | < | • Sends *Channel Assignment Message* (GRANTED_MODE = '01'). |
| • Receives $N_{5m}$ consecutive valid frames. | | | | |
| • Begins sending the Traffic Channel preamble. | | | | • Acquires the Reverse Traffic Channel. |
| • Begins transmitting null Traffic Channel data. | < | Forward Traffic Channel | < | • Sends *Base Station Acknowledgment Order.* |
| • Sends *Service Request Message* (FOR_MUX_OPTION and REV_MUX_OPTION indicates max number of Supplemental Code Channels). | > | Reverse Traffic Channel | > | |
| • Begins processing primary traffic in accordance with Service Option n. | < | Forward Traffic Channel | < | • Sends *Service Connect Message.* |
| • Sends *Service Connect Completion Message.* | > | Reverse Traffic Channel | > | |
| • Sends packet. | > | Reverse Fundamental Code Channel | > | |
| | < | Forward Fundamental Code Channel | < | • Sends packet. |
| *(Continued on next page)* | | | | *(Continued on next page)* |

**Figure B-19. Simple Call Flow Mobile Station Origination Example with Transmission on Reverse Supplemental Code Channels (Part 1 of 2)**

| Mobile Station | | | | Base Station |
|---|---|---|---|---|
| *(Continued from previous page)* | | | | *(Continued from previous page)* |
| • Mobile station has a "large" packet to send. | | | | |
| • Continue transmitting on the Fundamental Code Channel. | > | Reverse Fundamental Code Channel | > | |
| • Sends *Supplemental Channel Request Message.* | > | Reverse Fundamental Code Channel | > | |
| | < | Forward Fundamental Code Channel | < | • Send *Supplemental Channel Assignment Message.* |
| • Begins transmitting on the Reverse Supplemental Code Channels. | > | Reverse Fundamental & Supplemental Code Channels | > | |
| *(User traffic)* | | | | *(User traffic)* |

**Figure B-19. Simple Call Flow Mobile Station Origination Example with Transmission on Reverse Supplemental Code Channels (Part 2 of 2)**

| Mobile Station | | Base Station |
|---|---|---|
| | | • Packet arrives. |
| | < Paging Channel < | • Sends *General Page Message* with "High Speed Packet Service Option." |
| • Sends *Page Response Message.* | > Access Channel > | • Sets up Traffic Channel |
| | | • Begins sending null Traffic Channel data. |
| • Sets up Traffic Channel. | < Paging Channel < | • Sends *Extended Channel Assignment Message* (GRANTED_MODE = '00'). |
| • Receives $N_{5m}$ consecutive valid frames. | | |
| • Begins sending the Traffic Channel preamble. | | • Acquires the Reverse Fundamental Code Channel. |
| • Begins transmitting null Traffic Channel data. | < Forward Fundamental Code Channel < | • Sends *Base Station Acknowledgment Order.* |
| • Processes *Service Request Message.* | < Forward Fundamental Code Channel | • Sends *Service Request Message* (FOR_MUX_OPTION and REV_MUX_OPTION indicates the maximum number of Supplemental Forward and Reverse Code Channels). |
| *(Continued on next page)* | | *(Continued on next page)* |

**Figure B-20. Simple Call Flow, Mobile Station Termination Example with Transmission on Forward Supplemental Code Channel(s) (Part 1 of 3)**

| Mobile Station | | | | Base Station |
|---|---|---|---|---|
| *(Continued from previous page)* | | | | *(Continued from previous page)* |
| • Sends *Service Response Message* to accept Service Option with FOR_MUX_OPTION and REV_MUX_OPTION to indicate the maximum number of Supplemental Forward and Reverse Code Channels supported by the mobile station. | > | Reverse Fundamental Code Channel | > | |
| • Begins processing primary traffic in accordance with Service Option and multiplex option. | < | Forward Fundamental Code Channel | < | • Sends *Service Connect Message*. |
| • Sends *Service Connect Completion Message.* | > | Reverse Fundamental Code Channel | > | |
| • Sends packet, if any, on the Fundamental Code Channel. | > | Reverse Fundamental Code Channel | > | |
| | < | Forward Fundamental Code Channel | < | • Sends packet, if any, on the Fundamental Code Channel. |
| *(Continued on next page)* | | | | *(Continued on next page)* |

**Figure B-20. Simple Call Flow, Mobile Station Termination Example with Transmission on Forward Supplemental Code Channel(s) (Part 2 of 3)**

| Mobile Station | | Base Station |
|---|---|---|
| *(Continued from previous page)* | | *(Continued from previous page)* |
| | | • Base station decides that it requires to use Supplemental Channels to send a "large" packet. |
| | < Forward Fundamental Code Channel < | • Sends *Supplemental Channel Assignment Message*. |
| • Begins processing packet data received from Forward Fundamental and Supplemental Code Channel(s). | < Forward Fundamental & Supplemental Code Channels < | • Begins transmitting on the Supplemental Code Channel(s) for the duration specified in *Supplemental Channel Assignment Message*. |
| *(User traffic)* | | *(User traffic)* |

**Figure B-20. Simple Call Flow, Mobile Station Termination Example with Transmission on Forward Supplemental Code Channel(s) (Part 3 of 3)**

| Mobile Station | | Base Station |
|---|---|---|
| | | • Packet arrives |
| | < Paging Channel < | • Sends *General Page Message* with "High Speed Packet Service Option." |
| • Sends *Page Response Message.* | > Access Channel > | • Sets up Traffic Channel. |
| | | • Begins sending null Traffic Channel data. |
| • Sets up Traffic Channel. | < Paging Channel < | • Sends *Extended Channel Assignment Message* (GRANTED_MODE = '00'). |
| • Receives $N_{5m}$ consecutive valid frames. | | |
| • Begins sending the Traffic Channel preamble. | | • Acquires the Reverse Fundamental Code Channel. |
| • Begins transmitting null Traffic Channel data. | < Forward Fundamental Code Channel < | • Sends *Base Station Acknowledgment Order.* |
| • Processes *Service Request Message.* | < Forward Fundamental Code Channel < | • Sends *Service Request Message* (FOR_MUX_OPTION and REV_MUX_OPTION proposes the maximum number of Supplemental Forward and Reverse Code Channels to be used). |
| *(Continued on next page)* | | *(Continued on next page)* |

**Figure B-21. Simple Call Flow, Mobile Station Termination Example with Transmission on Reverse Supplemental Code Channel(s) (Part 1 of 3)**

| Mobile Station | | | | Base Station |
|---|---|---|---|---|
| *(Continued from previous page)* | | | | *(Continued from previous page)* |
| • Sends *Service Response Message* to accept Service Option, with FOR_MUX_OPTION and REV_MUX_OPTION to indicate the maximum number of Supplemental Code Channels supported by the mobile station. | > | Reverse Fundamental Code Channel | > | |
| • Begins processing primary traffic in accordance with the service configuration. | < | Forward Fundamental Code Channel | < | • Sends *Service Connect Message* to connect corresponding SO, with FOR_MUX_OPTION and REV_MUX_OPTION to specify the maximum number of Supplemental Code Channel(s) mutually supported. |
| • Sends *Service Connect Completion Message.* | > | Reverse Fundamental Code Channel | > | |
| • Sends packet data. | > | Reverse Fundamental Code Channel | > | |
| | < | Forward Fundamental Code Channel | < | • Sends packet data. |
| • Mobile station has a "large" packet to send, so begins transmitting packet. | > | Reverse Fundamental Code Channel | > | |
| *(Continued on next page)* | | | | *(Continued on next page)* |

**Figure B-21. Simple Call Flow, Mobile Station Termination Example with Transmission on Reverse Supplemental Code Channel(s) (Part 2 of 3)**

| Mobile Station | | | | Base Station |
|---|---|---|---|---|
| *(Continued from previous page)* | | | | *(Continued from previous page)* |
| • Sends *Supplemental Channel Request Message*, and continues transmitting on the Reverse Fundamental Code Channel. | > | Reverse Fundamental Code Channel | > | |
| | < | Forward Fundamental Code Channel | < | • Send *Supplemental Channel Assignment Message*. |
| • Begins transmitting on the Reverse Supplemental Code Channel(s), in addition to continuing on the Reverse Fundamental Code Channel. | > | Reverse Fundamental and Supplemental Code Channels | > | |
| *(User traffic)* | | | | *(User traffic)* |

**Figure B-21. Simple Call Flow, Mobile Station Termination Example with Transmission on Reverse Supplemental Code Channel(s) (Part 3 of 3)**

No text.

# ANNEX C PROTOCOL LAYERING

Annex C is an informative annex which provides insight into the protocol layering structure for CDMA implementations.

Figure C-1 shows a simplified logical view of the CDMA protocol structure for the Paging Channel, Access Channel, Forward Traffic Channel and Reverse Traffic Channel. This protocol is divided into conceptual layers. Layer 1 is the physical layer of the digital radio channel, including those functions associated with the transmission of bits, such as modulation, coding, framing, and channelization via radio waves. Between Layer 1 and Layer 2 is a Multiplex Sublayer containing the multiplexing functions that allow sharing of the digital radio channel for user data and signaling processes.

For user data, protocol layering above the Multiplex Sublayer is service option dependent and, where used, will be described in standards for the service options.

For the signaling protocol described in this standard, two higher layers are defined. Signaling protocol Layer 2 is the protocol associated with the reliable delivery of signaling Layer 3 messages between the base station and the mobile station, such as message retransmission and duplicate detection. Signaling Layer 3 is the protocol associated with call processing, radio channel control, and mobile station control, including call setup, handoff, power control, and mobile station lockout.

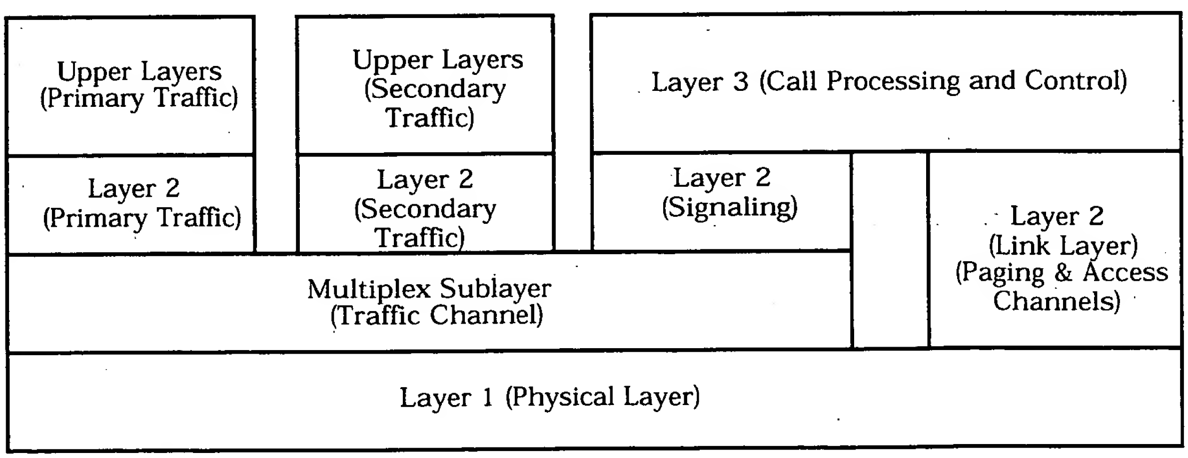


**Figure C-1. Mobile Station and Base Station Layers**

No text.

## ANNEX D CDMA CONSTANTS

Annex D is a normative annex which contains tables that give specific values for the constant identifiers. These identifiers take the forms such as $T_{20m}$ and $N_{5m}$. The subscripted numbers vary to identify the particular constant. Typically the subscripted letter "m" refers to the mobile station and the subscripted letter "b" refers to the base station. The following tables provide values for identifiers given in the text:

Table D-1. Time Limits

Table D-2. Other Constants

**Table D-1. Time Limits (Part 1 of 4)**

| Time Limit | Description | Value | References |
|---|---|---|---|
| $T_{1m}$ | Maximum time the mobile station waits for an acknowledgment | 0.4 s | 6.6.4.1.3.1.1<br>7.6.4.1.3.1.2 |
| $T_{2m}$ | Maximum time allowed for the mobile station to send an acknowledgment | 0.2 s | 6.6.4.1.3.1.2 |
| $T_{3m}$ | Period in which two messages received by the mobile station on the Forward Traffic Channel, not requiring an acknowledgment, and carrying the same sequence numbers, are considered duplicates | 0.32 s | 6.6.4.1.3.2<br>7.6.4.1.3.2 |
| $T_{4m}$ | Period in which two messages received by the mobile station on the same Paging Channel and carrying the same sequence numbers are considered duplicates | 2.2 s | 6.6.2.1.2<br>7.6.2.1.4<br>7.6.3.1.1 |
| $T_{5m}$ | Limit of the Forward Traffic Channel fade timer | 5 s | 6.4.4 |
| $T_{20m}$ | Maximum time to remain in the *Pilot Channel Acquisition Substate* of the *Mobile Station Initialization State* | 15 s | 6.6.1.2 |
| $T_{21m}$ | Maximum time to receive a valid Sync Channel message | 1 s | 6.6.1.3 |
| $T_{30m}$ | Maximum time to receive a valid Paging Channel message | 3 s | 6.4.3 |
| $T_{31m}$ | Maximum time for which configuration parameters are considered valid | 600 s | 6.6.2.2 |

**Table D-1. Time Limits (Part 2 of 4)**

| Time Limit | Description | Value | References |
|---|---|---|---|
| $T_{32m}$ | Maximum time to enter the *Update Overhead Information Substate* of the *System Access State* to respond to an *SSD Update Message*, *Base Station Challenge Confirmation Order*, and *Authentication Challenge Message* | 5 s | 6.6.2.4<br>6.6.4 |
| $T_{33m}$ | Maximum time to enter the *Update Overhead Information Substate* of the *System Access State* (except in response to authentication messages) | 0.3 s | 6.6.2<br>6.6.5.5.2.3 |
| $T_{34m}$ | Maximum time to enter the *Update Overhead Information Substate* or the *Mobile Station Idle State* after receiving a *Channel Assignment Message* with $ASSIGN\_MODE_r$ equal to '001' or '101' | 3 s | 6.6.3.3 |
| $T_{40m}$ | Maximum time to receive a valid Paging Channel message before aborting an access attempt (see $T_{72m}$) | 3 s | 6.4.3 |
| $T_{41m}$ | Maximum time to obtain updated overhead messages arriving on the Paging Channel | 4 s | 6.6.3.2 |
| $T_{42m}$ | Maximum time to receive a delayed layer 3 response following the receipt of an acknowledgment for an access probe | 12 s | 6.6.3.1.1.2<br>6.6.3.3<br>6.6.3.5 |
| $T_{50m}$ | Maximum time to obtain $N_{5m}$ consecutive good Forward Traffic Channel frames when in the *Traffic Channel Initialization Substate* of the *Mobile Station Control on the Traffic Channel State* | 1 s | 6.6.4.2 |
| $T_{51m}$ | Maximum time for the mobile station to receive a *Base Station Acknowledgment Order* after the first occurrence of receiving $N_{5m}$ consecutive good frames when in the *Traffic Channel Initialization Substate* of the *Mobile Station Control on the Traffic Channel State* | 2 s | 6.6.4.2 |
| $T_{52m}$ | Maximum time to receive a message in the *Waiting for Order Substate* of the *Mobile Station Control on the Traffic Channel State* that transits the mobile station to a different substate or state | 5 s | 6.6.4.3.1 |

**Table D-1. Time Limits (Part 3 of 4)**

| Time Limit | Description | Value | References |
|---|---|---|---|
| $T_{53m}$ | Maximum time to receive a message in the *Waiting for Mobile Station Answer Substate* of the *Mobile Station Control on the Traffic Channel State* that transits the mobile station to a different substate or state | 65 s | 6.6.4.3.2 |
| $T_{54m}$ | Maximum time for the mobile station to send an *Origination Continuation Message* upon entering the *Conversation Substate* of the *Mobile Station Control on the Traffic Channel State* | 0.2 s | 6.6.4.4 |
| $T_{55m}$ | Maximum time to receive a message in the *Release Substate* of the *Mobile Station Control on the Traffic Channel State* that transits the mobile station to a different substate or state | 2 s | 6.6.4.5 |
| $T_{56m}$ | Default maximum time to respond to a received message or order on the Forward Traffic Channel | 0.2 s | 6.6.4<br>6.6.6 |
| $T_{57m}$ | Limit of the power-up registration timer | 20 s | 6.6.5.1.1<br>6.6.5.5.1.3 |
| $T_{58m}$ | Maximum time for the mobile station to respond to a service option request | 5 s | 6.6.4.1.2.2 |
| $T_{59m}$ | Maximum time for the mobile station to respond to a *Service Request Message* or a *Service Response Message* | 5 s | 6.6.4.1.2.2 |
| $T_{60m}$ | Maximum time to execute a hard handoff without return on failure involving a new frequency assignment using the same base station | 0.06 s | 6.6.6.2.8.1 |
| $T_{61m}$ | Maximum time to execute a hard handoff without return on failure involving a new frequency assignment using a different base station | 0.08 s | 6.6.6.2.8.1 |
| $T_{62m}$ | Maximum time to execute a hard handoff without return on failure involving the same frequency assignment | 0.02 s | 6.6.6.2.8.1 |
| $T_{63m}$ | Maximum time to execute a CDMA-to-Analog handoff | 0.1 s | 6.6.6.2.9 |
| $T_{64m}$ | Maximum time to wait for a *Base Station Challenge Confirmation Order* | 10 s | 6.3.12.1.9 |
| $T_{65m}$ | Maximum time for the mobile station to wait for a *Service Connect Message* while the *Waiting for Service Connect Message Subfunction* is active | 5 s | 6.6.4.1.2.2.4 |

**Table D-1. Time Limits (Part 4 of 4)**

| Time Limit | Description | Value | References |
|---|---|---|---|
| $T_{66m}$ | Maximum time for the mobile station to delete the TMSI after TMSI expiration time has exceeded the System Time | 200 s | 6.6.2 |
| $T_{67m}$ | Maximum time for the mobile station to inhibit transmitting due to a malfunction. | 2 s | 6.5.1 |
| $T_{68m}$ | Maximum time for the mobile station to wait for a *Service Request Message*, *Service Response Message*, or *Service Connect Message* while the *Waiting for Service Request Message Subfunction* or *Waiting for Service Response Message Subfunction* is active | 5 s | 6.6.4.1.2.2.2<br>6.6.4.1.2.2.3 |
| $T_{69m}$ | Fixed portion of the full-TMSI timer | 24 s | 6.6.3.1.6 |
| $T_{70m}$ | Maximum time between the mobile station's obtaining a measurement and sending a *Candidate Frequency Search Report Message* which contains that measurement | 0.8 s | 6.6.6.2.8.3<br>6.6.6.2.10 |
| $T_{71m}$ | Maximum time for the mobile station to send a *Candidate Frequency Search Report Message* after completing a search | 0.04 s | 6.6.6.2.8.3 |
| $T_{72m}$ | Maximum time to receive a valid Paging Channel message before aborting an access attempt, when there exists at least one access handoff candidate pilot for the access attempt (see also $T_{40m}$) | 1 s | 6.4.3 |
| $T_{73m}$ | Maximum time for the mobile station to send a *Handoff Completion Message* after the action time of a received handoff message directing the mobile station to perform a hard handoff without return on failure | 0.3s | 6.6.6.2.5.2 |
| $T_{1b}$ | Maximum period between subsequent transmissions of an overhead message on the Paging Channel by the base station | 1.28 s | 7.6.2.2 |
| $T_{2b}$ | Maximum time for the base station to send a *Release Order* after receiving a *Release Order* | 0.8 s | 7.6.4 |
| $T_{3b}$ | Minimum time the base station continues to transmit on a code channel after sending or receiving a *Release Order* | 0.3 s | 7.6.4.5 |
| $T_{4b}$ | Maximum time for the base station to respond to a service option request | 5 s | 7.6.4.1.2.2.1 |

**Table D-2. Other Constants**

| Constant | Description | Value | References |
|---|---|---|---|
| $N_{1m}$ | Maximum number of times that a mobile station transmits a message requiring an acknowledgment on the Reverse Traffic Channel | 9 | 6.6.4.1.3.1.1<br>6.4.5.5 |
| $N_{2m}$ | Number of received consecutive bad Forward Traffic Channel frames before a mobile station must disable its transmitter | 12 | 6.4.4 |
| $N_{3m}$ | Number of received consecutive good Forward Traffic Channel frames before a mobile station is allowed to re-enable its transmitter after disabling its transmitter | 2 | 6.4.4<br>6.6.6.2.8 |
| $N_{4m}$ | Reserved | | |
| $N_{5m}$ | Number of received consecutive good Forward Traffic Channel frames before a mobile station is allowed to enable its transmitter after entering the *Traffic Channel Initialization Substate* of the *Mobile Station Control on the Traffic Channel State* | 2 | 6.6.4.2 |
| $N_{6m}$ | Supported Traffic Channel Active Set size | 6 | 6.6.6.2.6.1<br>7.6.6.2.2.2<br>7.6.6.2.2.10 |
| $N_{7m}$ | Supported Traffic Channel Candidate Set size | 10 | 6.6.6.2.6.2 |
| $N_{8m}$ | Minimum supported Neighbor Set size | 40 | 6.6.2.1.4.1<br>6.6.2.2.3<br>6.6.6.2.6.3<br>7.6.6.2.1.2<br>7.6.6.2.1.3 |
| $N_{9m}$ | Minimum supported zone list size | 7 | 6.6.5.1.5 |
| $N_{10m}$ | SID/NID list size | 4 | 6.6.5 |
| $N_{11m}$ | Number of received consecutive good Forward Traffic Channel frames before a mobile station re-enables its transmitter after disabling its transmitter during a CDMA-to-CDMA Hard Handoff | 1 | 6.6.6.2.8 |
| $N_{12m}$ | Number of frames over which the mobile station maintains a running average of the total received power | 10 | 6.6.6.2.8.3 |
| $N_{13m}$ | Maximum number of pilots reported in an Access Channel message | 6 | 6.6.3.1.7<br>6.7.1.3.1.3 |

No text.

# ANNEX E CDMA RETRIEVABLE AND SETTABLE PARAMETERS

This is a normative annex which describes the parameters that can be retrieved and set in the mobile station using the *Retrieve Parameters Message*, the *Parameters Response Message*, and the *Set Parameters Message.*

PARAMETER_ID values from 0 through 32767 are reserved for definition by this standard and shall not be defined by mobile station manufacturers. PARAMETER_ID values from 32768 through 65535 may be defined by mobile station manufacturers.

**Table E-1. Retrievable and Settable Parameters (Part 1 of 5)**

| Parameter Identifier | Value of PARA-METER_ID (decimal) | Length (bits) (PARA-METER_LEN is Length - 1) | Support Required? (Y or N) | Settable Parameter? (Y or N) | Reference Section |
|---|---|---|---|---|---|
| MUX1_REV_1 | 1 | 24 | Y | Y | 6.4.5.2 |
| MUX1_REV_2 | 2 | 24 | Y | Y | 6.4.5.2 |
| MUX1_REV_3 | 3 | 24 | Y | Y | 6.4.5.2 |
| MUX1_REV_4 | 4 | 24 | Y | Y | 6.4.5.2 |
| MUX1_REV_5 | 5 | 24 | Y | Y | 6.4.5.2 |
| MUX1_REV_6 | 6 | 24 | Y | Y | 6.4.5.2 |
| MUX1_REV_7 | 7 | 24 | Y | Y | 6.4.5.2 |
| MUX1_REV_8 | 8 | 24 | Y | Y | 6.4.5.2 |
| MUX1_REV_9 | 9 | - | - | - | 6.4.5.2 |
| MUX1_REV_10 | 10 | - | - | - | 6.4.5.2 |
| MUX1_REV_11 | 11 | 24 | N | Y | 6.4.5.2 |
| MUX1_REV_12 | 12 | 24 | N | Y | 6.4.5.2 |
| MUX1_REV_13 | 13 | 24 | N | Y | 6.4.5.2 |
| MUX1_REV_14 | 14 | 24 | N | Y | 6.4.5.2 |
| MUX1_FOR_1 | 15 | 24 | Y | Y | 6.4.5.4 |
| MUX1_FOR_2 | 16 | 24 | Y | Y | 6.4.5.4 |
| MUX1_FOR_3 | 17 | 24 | Y | Y | 6.4.5.4 |
| MUX1_FOR_4 | 18 | 24 | Y | Y | 6.4.5.4 |
| MUX1_FOR_5 | 19 | 24 | Y | Y | 6.4.5.4 |
| MUX1_FOR_6 | 20 | 24 | Y | Y | 6.4.5.4 |
| MUX1_FOR_7 | 21 | 24 | Y | Y | 6.4.5.4 |
| MUX1_FOR_8 | 22 | 24 | Y | Y | 6.4.5.4 |

**Table E-1. Retrievable and Settable Parameters (Part 2 of 5)**

| Parameter Identifier | Value of PARA-METER_ID (decimal) | Length (bits) (PARA-METER_LEN is Length - 1) | Support Required? (Y or N) | Settable Parameter? (Y or N) | Reference Section |
|---|---|---|---|---|---|
| MUX1_FOR_9 | 23 | 24 | Y | Y | 6.4.5.4 |
| MUX1_FOR_10 | 24 | 24 | Y | Y | 6.4.5.4 |
| MUX1_FOR_11 | 25 | 24 | N | Y | 6.4.5.4 |
| MUX1_FOR_12 | 26 | 24 | N | Y | 6.4.5.4 |
| MUX1_FOR_13 | 27 | 24 | N | Y | 6.4.5.4 |
| MUX1_FOR_14 | 28 | 24 | N | Y | 6.4.5.4 |
| PAG_1 | 29 | 24 | Y | Y | 6.4.5.3 |
| PAG_2 | 30 | 24 | Y | Y | 6.4.5.3 |
| PAG_3 | 31 | 16 | Y | Y | 6.4.5.3 |
| PAG_4 | 32 | 24 | Y | Y | 6.4.5.3 |
| PAG_5 | 33 | 24 | Y | Y | 6.4.5.3 |
| PAG_6 | 34 | 16 | Y | Y | 6.4.5.3 |
| PAG_7 | 35 | 16 | Y | Y | 6.4.5.3 |
| ACC_1 | 36 | 16 | Y | Y | 6.4.5.1 |
| ACC_2 | 37 | 16 | Y | Y | 6.4.5.1 |
| ACC_3 | 38 | 16 | Y | Y | 6.4.5.1 |
| ACC_4 | 39 | 16 | Y | Y | 6.4.5.1 |
| ACC_5 | 40 | 16 | Y | Y | 6.4.5.1 |
| ACC_6 | 41 | 16 | Y | Y | 6.4.5.1 |
| ACC_7 | 42 | 16 | Y | Y | 6.4.5.1 |
| ACC_8 | 43 | 16 | Y | Y | 6.4.5.1 |
| LAYER2_RTC1 | 44 | 16 | Y | Y | 6.4.5.5 |
| LAYER2_RTC2 | 45 | 16 | Y | Y | 6.4.5.5 |
| LAYER2_RTC3 | 46 | 16 | Y | Y | 6.4.5.5 |
| LAYER2_RTC4 | 47 | 16 | Y | Y | 6.4.5.5 |
| LAYER2_RTC5 | 48 | 16 | Y | Y | 6.4.5.5 |
| OTHER_SYS_TIME | 49 | 36 | Y | N | 6.4.5.6 |

**Table E-1. Retrievable and Settable Parameters (Part 3 of 5)**

| Parameter Identifier | Value of PARA-METER_ID (decimal) | Length (bits) (PARA-METER_LEN is Length - 1) | Support Required? (Y or N) | Settable Parameter? (Y or N) | Reference Section |
|---|---|---|---|---|---|
| MUX2_REV_1 | 50 | 24 | Y | Y | 6.4.5.2 |
| MUX2_REV_2 | 51 | 24 | Y | Y | 6.4.5.2 |
| MUX2_REV_3 | 52 | 24 | Y | Y | 6.4.5.2 |
| MUX2_REV_4 | 53 | 24 | Y | Y | 6.4.5.2 |
| MUX2_REV_5 | 54 | 24 | Y | Y | 6.4.5.2 |
| MUX2_REV_6 | 55 | 24 | Y | Y | 6.4.5.2 |
| MUX2_REV_7 | 56 | 24 | Y | Y | 6.4.5.2 |
| MUX2_REV_8 | 57 | 24 | Y | Y | 6.4.5.2 |
| MUX2_REV_9 | 58 | 24 | Y | Y | 6.4.5.2 |
| MUX2_REV_10 | 59 | 24 | Y | Y | 6.4.5.2 |
| MUX2_REV_11 | 60 | 24 | Y | Y | 6.4.5.2 |
| MUX2_REV_12 | 61 | 24 | Y | Y | 6.4.5.2 |
| MUX2_REV_13 | 62 | 24 | Y | Y | 6.4.5.2 |
| MUX2_REV_14 | 63 | 24 | Y | Y | 6.4.5.2 |
| MUX2_REV_15 | 64 | 24 | Y | Y | 6.4.5.2 |
| MUX2_REV_16 | 65 | 24 | Y | Y | 6.4.5.2 |
| MUX2_REV_17 | 66 | 24 | Y | Y | 6.4.5.2 |
| MUX2_REV_18 | 67 | 24 | Y | Y | 6.4.5.2 |
| MUX2_REV_19 | 68 | 24 | Y | Y | 6.4.5.2 |
| MUX2_REV_20 | 69 | 24 | Y | Y | 6.4.5.2 |
| MUX2_REV_21 | 70 | 24 | Y | Y | 6.4.5.2 |
| MUX2_REV_22 | 71 | 24 | Y | Y | 6.4.5.2 |
| MUX2_REV_23 | 72 | 24 | Y | Y | 6.4.5.2 |
| MUX2_REV_24 | 73 | 24 | Y | Y | 6.4.5.2 |
| MUX2_REV_25 | 74 | 24 | Y | Y | 6.4.5.2 |
| MUX2_REV_26 | 75 | - | - | - | 6.4.5.2 |

1 **Table E-1. Retrievable and Settable Parameters (Part 4 of 5)**

| Parameter Identifier | Value of PARA-METER_ID (decimal) | Length (bits) (PARA-METER_LEN is Length - 1) | Support Required? (Y or N) | Settable Parameter? (Y or N) | Reference Section |
|---|---|---|---|---|---|
| MUX2_FOR_1 | 76 | 24 | Y | Y | 6.4.5.4 |
| MUX2_FOR_2 | 77 | 24 | Y | Y | 6.4.5.4 |
| MUX2_FOR_3 | 78 | 24 | Y | Y | 6.4.5.4 |
| MUX2_FOR_4 | 79 | 24 | Y | Y | 6.4.5.4 |
| MUX2_FOR_5 | 80 | 24 | Y | Y | 6.4.5.4 |
| MUX2_FOR_6 | 81 | 24 | Y | Y | 6.4.5.4 |
| MUX2_FOR_7 | 82 | 24 | Y | Y | 6.4.5.4 |
| MUX2_FOR_8 | 83 | 24 | Y | Y | 6.4.5.4 |
| MUX2_FOR_9 | 84 | 24 | Y | Y | 6.4.5.4 |
| MUX2_FOR_10 | 85 | 24 | Y | Y | 6.4.5.4 |
| MUX2_FOR_11 | 86 | 24 | Y | Y | 6.4.5.4 |
| MUX2_FOR_12 | 87 | 24 | Y | Y | 6.4.5.4 |
| MUX2_FOR_13 | 88 | 24 | Y | Y | 6.4.5.4 |
| MUX2_FOR_14 | 89 | 24 | Y | Y | 6.4.5.4 |
| MUX2_FOR_15 | 90 | 24 | Y | Y | 6.4.5.4 |
| MUX2_FOR_16 | 91 | 24 | Y | Y | 6.4.5.4 |
| MUX2_FOR_17 | 92 | 24 | Y | Y | 6.4.5.4 |
| MUX2_FOR_18 | 93 | 24 | Y | Y | 6.4.5.4 |
| MUX2_FOR_19 | 94 | 24 | Y | Y | 6.4.5.4 |
| MUX2_FOR_20 | 95 | 24 | Y | Y | 6.4.5.4 |
| MUX2_FOR_21 | 96 | 24 | Y | Y | 6.4.5.4 |
| MUX2_FOR_22 | 97 | 24 | Y | Y | 6.4.5.4 |
| MUX2_FOR_23 | 98 | 24 | Y | Y | 6.4.5.4 |
| MUX2_FOR_24 | 99 | 24 | Y | Y | 6.4.5.4 |
| MUX2_FOR_25 | 100 | 24 | Y | Y | 6.4.5.4 |
| MUX2_FOR_26 | 101 | 24 | Y | Y | 6.4.5.4 |

2

**Table E-1. Retrievable and Settable Parameters (Part 5 of 5)**

| Parameter Identifier | Value of PARA-METER_ID (decimal) | Length (bits) (PARA-METER_LEN is Length - 1) | Support Required? (Y or N) | Settable Parameter? (Y or N) | Reference Section |
|---|---|---|---|---|---|
| SUPP1_REV_S | 102 | 24 | Y | Y | 6.4.5.2 |
| SUPP1_REV_P | 103 | 24 | Y | Y | 6.4.5.2 |
| SUPP2_REV_S | 104 | 24 | Y | Y | 6.4.5.2 |
| SUPP2_REV_P | 105 | 24 | Y | Y | 6.4.5.2 |
| SUPP3_REV_S | 106 | 24 | Y | Y | 6.4.5.2 |
| SUPP3_REV_P | 107 | 24 | Y | Y | 6.4.5.2 |
| SUPP4_REV_S | 108 | 24 | Y | Y | 6.4.5.2 |
| SUPP4_REV_P | 109 | 24 | Y | Y | 6.4.5.2 |
| SUPP5_REV_S | 110 | 24 | Y | Y | 6.4.5.2 |
| SUPP5_REV_P | 111 | 24 | Y | Y | 6.4.5.2 |
| SUPP6_REV_S | 112 | 24 | Y | Y | 6.4.5.2 |
| SUPP6_REV_P | 113 | 24 | Y | Y | 6.4.5.2 |
| SUPP7_REV_S | 114 | 24 | Y | Y | 6.4.5.2 |
| SUPP7_REV_P | 115 | 24 | Y | Y | 6.4.5.2 |
| SUPP1_FOR_S | 116 | 24 | Y | Y | 6.4.5.4 |
| SUPP1_FOR_P | 117 | 24 | Y | Y | 6.4.5.4 |
| SUPP2_FOR_S | 118 | 24 | Y | Y | 6.4.5.4 |
| SUPP2_FOR_P | 119 | 24 | Y | Y | 6.4.5.4 |
| SUPP3_FOR_S | 120 | 24 | Y | Y | 6.4.5.4 |
| SUPP3_FOR_P | 121 | 24 | Y | Y | 6.4.5.4 |
| SUPP4_FOR_S | 122 | 24 | Y | Y | 6.4.5.4 |
| SUPP4_FOR_P | 123 | 24 | Y | Y | 6.4.5.4 |
| SUPP5_FOR_S | 124 | 24 | Y | Y | 6.4.5.4 |
| SUPP5_FOR_P | 125 | 24 | Y | Y | 6.4.5.4 |
| SUPP6_FOR_S | 126 | 24 | Y | Y | 6.4.5.4 |
| SUPP6_FOR_P | 127 | 24 | Y | Y | 6.4.5.4 |
| SUPP7_FOR_S | 128 | 24 | Y | Y | 6.4.5.4 |
| SUPP7_FOR_P | 129 | 24 | Y | Y | 6.4.5.4 |

No text.

# ANNEX F MOBILE STATION DATABASE

## F.1 Introduction

This is an informative annex which lists the numeric indicators that are described by this document and stored in the mobile station's permanent or semi-permanent memory. Some of these indicators are required; other indicators are optional and are so noted.

The indicators are organized in this annex according to two categories:

- Mobile station indicators — These indicators are global to the mobile station and independent of the mobile station's NAMs.
- NAM indicators — These indicators specify parameters associated with the mobile station's NAM.

The description of each indicator below includes the indicator's name, the number of bits it contains, and the section in this document where it is defined. Permanent indicators are denoted by the "p" subscript; semi-permanent indicators are denoted by the "s-p" subscript.

## F.2 Mobile Station Indicators

Mobile station indicators are organized into permanent mobile station indicators and semi-permanent mobile station indicators.

### F.2.1 Permanent Mobile Station Indicators

Permanent mobile station indicators specify physical station configuration and attributes, independent of NAM. The indicators are listed in Table F.2.1-1.

**Table F.2.1-1. Permanent Mobile Station Indicators**

| Indicator | Number of Bits | Where Defined | Notes |
|---|---|---|---|
| $ESN_p$ | 32 | 6.3.2 | See 6.3.2 for special ESN storage and protection requirements. Includes $MOB\_MFG\_CODE_p$. |
| $SCM_p$ | 8 | 2.3.3 | |
| $SLOT\_CYCLE\_INDEX_p$ | 3 | 6.3.11 | |
| $MOB\_FIRM\_REV_p$ | 16 | 6.3.14 | |
| $MOB\_MODEL_p$ | 8 | 6.3.14 | |
| For each band class supported: | | | |
| $MOB\_P\_REV_p$ | 8 | 6.3.14 | |

### F.2.2 Semi-permanent Mobile Station Indicators

Semi-permanent mobile station indicators are retained when the mobile station power is turned off. These indicators are associated with mobile station registration and lock. They are independent of the NAM in use. Analog indicators are listed in Table F.2.2-1. CDMA indicators are listed in Table F.2.2-2.

**Table F.2.2-1. Analog Semi-permanent Mobile Station Indicators**

| Indicator | Number of Bits | Where Defined | Notes |
|---|---|---|---|
| $NXTREG_{s-p}$ | 21 | 2.3.4.1 | |
| $SID_{s-p}$ | 15 | 2.3.4.1 | |
| $LOCAID_{s-p}$ | 12 | 2.3.4.2 | |
| $PUREG_{s-p}$ | 1 | 2.3.4.2 | |

**Table F.2.2-2. CDMA Semi-permanent Mobile Station Indicators**

| Indicator | Number of Bits | Where Defined | Notes |
|---|---|---|---|
| $ZONE\_LIST_{s-p}$ | | 6.3.4 | |
| $REG\_ZONE_{s-p}$ | 12 | 6.3.4 | |
| $SID_{s-p}$ | 15 | 6.3.4 | |
| $NID_{s-p}$ | 16 | 6.3.4 | |
| $SID\_NID\_LIST_{s-p}$ | | 6.3.4 | |
| $SID_{s-p}$ | 15 | 6.3.4 | |
| $NID_{s-p}$ | 16 | 6.3.4 | |
| $BASE\_LAT\_REG_{s-p}$ | 22 | 6.3.4 | |
| $BASE\_LONG\_REG_{s-p}$ | 23 | 6.3.4 | |
| $REG\_DIST\_REG_{s-p}$ | 11 | 6.3.4 | |
| $LCKRSN\_P_{s-p}$ | 4 | 6.3.13 | |
| $MAINTRSN_{s-p}$ | 4 | 6.3.13 | |

## F.3 NAM Indicators

Each mobile station contains one or more NAMs. Table F.3-1 lists the permanent and semi-permanent values associated with each NAM.

**Table F.3-1. NAM Indicators (Part 1 of 2)**

| Indicator | Number of Bits | Where Defined | Notes |
|---|---|---|---|
| PREF_MODE$_p$ | Optional | 2.3.10.2 | Preferred mode: analog or CDMA. Mobile station manufacturer option. |
| CDMA_PREF_SERV$_p$ | Optional | 2.3.10.1 | Preferred CDMA serving system: A or B. |
| ANALOG_PREF_SERV$_p$ | Optional | 2.3.10.1 | Preferred analog serving system: A or B. |
| FIRSTCHP$_p$ | 11 | 2.3.7 | |
| A_KEY | 64 | 6.3.12.1.9 | |
| SSD_A$_{s-p}$ | 64 | 2.3.12.1.1 | Shared Secret Data A |
| SSD_B$_{s-p}$ | 64 | 2.3.12.1.1 | Shared Secret Data B |
| COUNT$_{s-p}$ | 6 | 2.3.12.1.3 | Call History Parameter |
| IMSI_M_CLASS$_p$ | 1 | 6.3.1 | |
| IMSI_T_CLASS$_p$ | 1 | 6.3.1 | |
| IMSI_M_S$_p$ | 34 | 6.3.1.1 | Includes IMSI_M_S1$_p$ and IMSI_M_S2$_p$. |
| IMSI_T_S$_p$ | 34 | 6.3.1.1 | Includes IMSI_T_S1$_p$ and IMSI_T_S2$_p$. |
| IMSI_M_ADDR_NUM$_p$ | 3 | 6.3.1 | Applies to IMSI_M. |
| IMSI_T_ADDR_NUM$_p$ | 3 | 6.3.1 | Applies to IMSI_T. |
| IMSI_M_11_12$_p$ | 7 | 6.3.1.2 | |
| IMSI_T_11_12$_p$ | 7 | 6.3.1.1 | |
| MCC_M$_p$ | 10 | 6.3.1.1 | |
| MCC_T$_p$ | 10 | 6.3.1.1 | |
| MDN$_p$ | See Notes | 6.3.1.4 | An MDN consists of up to 15 digits based on manufacturer specific coding. |
| ASSIGNING_TMSI_-ZONE$_{s-p}$ | 64 | 6.3.15 | |
| TMSI_CODE$_{s-p}$ | 32 | 6.3.15.1 | |
| TMSI_EXP_TIME$_{s-p}$ | 24 | 6.3.15.2 | |
| HOME_SID$_p$ | 15 | 2.3.8 | |

**Table F.3-1. NAM Indicators (Part 2 of 2)**

| Indicator | Number of Bits | Where Defined | Notes |
|---|---|---|---|
| $SID_p$ | 15 | 6.3.8 | |
| $NID_p$ | 16 | 6.3.8 | |
| $ACCOLC_p$ | 4 | 2.3.5 | |
| $EX_p$ | 1 | 2.3.6 | |
| $MOB\_TERM\_HOME_p$ | 1 | 6.3.8 | |
| $MOB\_TERM\_FOR\_SID_p$ | 1 | 6.3.8 | |
| $MOB\_TERM\_FOR\_NID_p$ | 1 | 6.3.8 | |

No text.

## ANNEX G BIBLIOGRAPHY

This is an informative annex. The documents listed in this annex are for information only and are not essential for the completion of the requirements of this standard.


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